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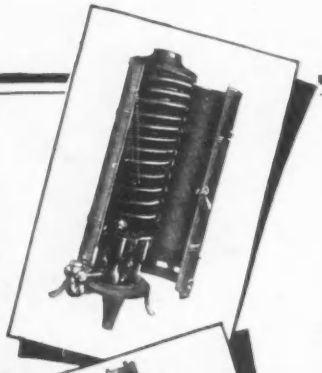

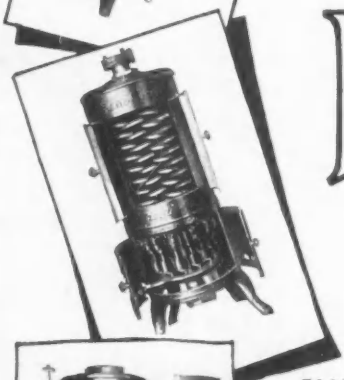

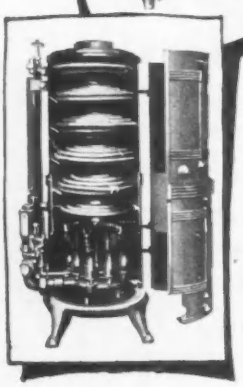

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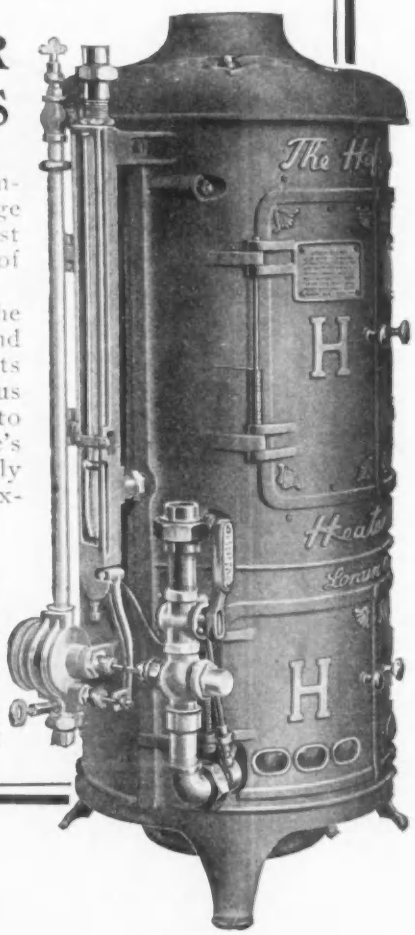

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VOL. XL. No. 3 SEPTEMBER, 1916 SERIAL NO. 216

THE ARCHITECTVRAL RECORD

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VIEW FROM SOUTHEAST—CLEVELAND MUSEUM OF ART. HUBBELL & BENES, ARCHITECTS.

THE ARCHITECTVRAL RECORD

VOLVME XL NVMBER III

SEPTEMBER, 1916

The CLEVELAND·MVSEVM·OF·ART

Hubbell & Benes Architects

BY I. T. FRARY

THERE has been thrown open to the public recently in the city of Cleveland a new structure to house the collections of the Cleveland Museum of Art. The beauty of its design, the completeness of its equipment and the convenience of its arrangement have attracted widespread attention from those interested in buildings of this character, and representatives from the staffs of the leading art museums of the country, who were present at the formal opening, expressed the opinion that nowhere had they seen a building more perfectly adapted to its requirements.

This museum owes its existence primarily to the munificence of three of Cleveland's public spirited citizens, John Huntington, Horace Kelly and Hinman B. Hurlbut, who, about two decades ago, bequeathed what were at that time large sums of money for the purpose of establishing and maintaining art collections and art instruction for the benefit of the public. The varying conditions under which these bequests were left made it seem for a time that it would be impossible to combine them; and as no one of them was individually large enough to build and equip a structure suited to the size of the city, the funds were allowed to accumulate while means were being devised by which they could be united.

Meanwhile, in order that no time might be lost when the question of finances finally should be solved, the firm of Hubbell and Benes was appointed to prepare plans for the proposed building. In this work they were assisted by consultation with Mr. Henry W. Kent of the Metropolitan Museum, New York, and the late Edmund B. Wheelwright of Boston. Nine years were spent in studying the various problems involved and many changes in location, plan, material and design were made before the final drawings were approved. A tract of land in Wade Park, affording a magnificent set-

ting for the building, was donated by Mr. J. H. Wade, sufficient ground being provided to accommodate any future additions to the building. Finally, on May 20, 1915, the excavation was started and on June 6, 1916, the new building was formally opened to the public.

The building occupies a site overlooking the lake in Wade Park, and the slope to the water is of sufficient extent to provide ample opportunity for a monumental forecourt, with fountain, lagoon and formal garden, which, when completed, will add greatly to the already beautiful setting, the charm of which is due in a large degree to the many trees with which it is surrounded.

The building itself, which is three hundred feet long by one hundred and twenty feet wide, is of white Georgia marble and stands on a low balustraded terrace. The south or main front is of extreme simplicity, broken in plan only by the entrance portico and the slight projection of the end pavilions. Great restraint has been shown in the use of ornament, the only enrichment, aside from the strictly architectural features incident to the use of the Ionic order, being two low relief panels between the engaged columns of the end pavilions. Inasmuch as this side of the building is occupied by the large top-lighted galleries, the wall above the basement is pierced only by the main doorway. The other three sides, however, are broken by the fenestration of the side-lighted galleries; and on the north façade the effect of an additional story is produced by omitting the terrace in order to get entrances on the ground floor level.

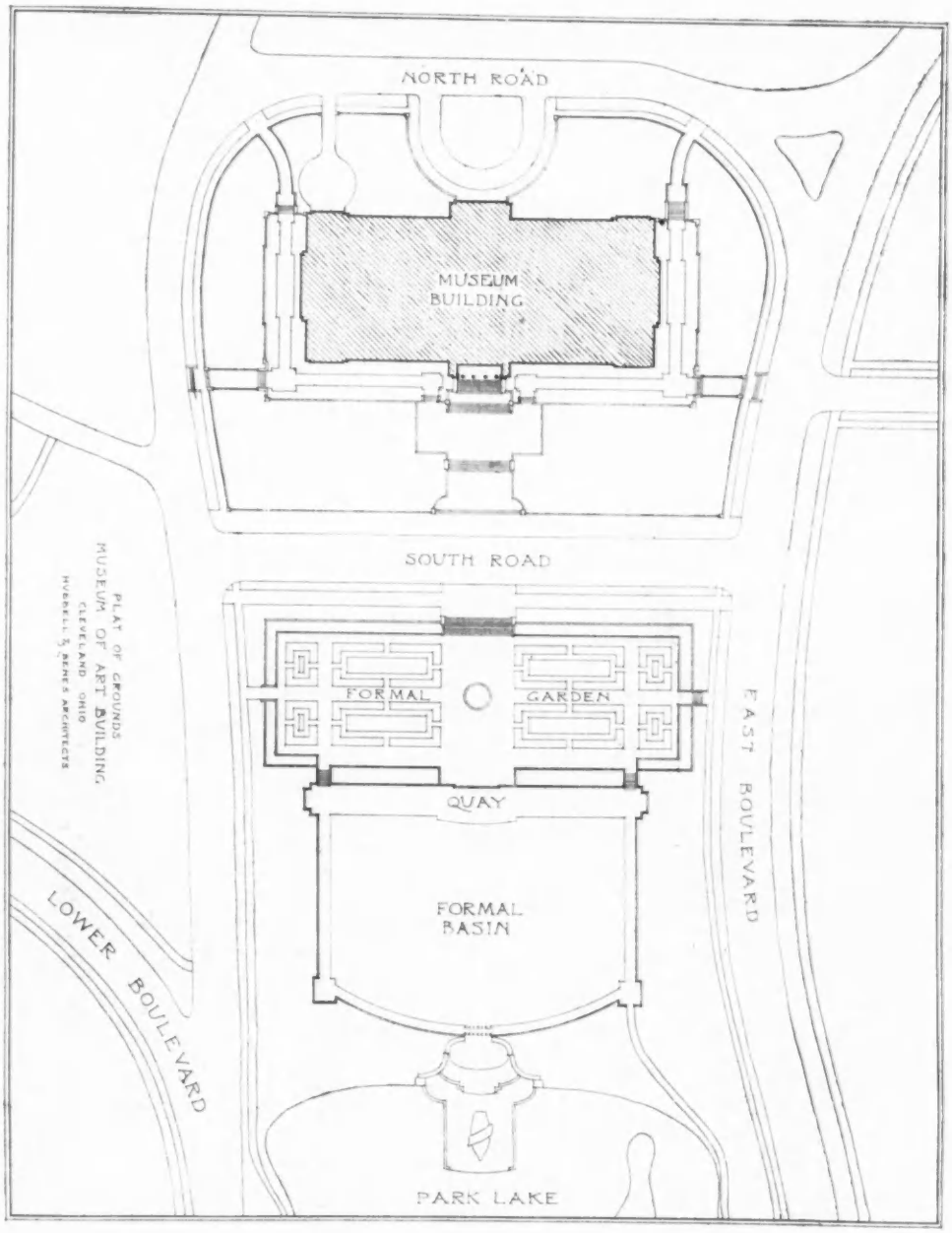
In laying out the plans of such a building, it is obvious that the most important factors to be taken into consideration are, first, to have the arrangement such as to provide for the comfort and to facilitate the movement of the throngs of visitors that will pass through it; and, second, to provide an effective and complete equipment for the working staff, upon whose efficiency depends the usefulness and attractiveness of the institution.

Reference to the accompanying plans will show that the arrangement of the rooms has been made as simple and evident as possible. From the main entrance one passes through the lobby to the rotunda, from which, on either side, open large rectangular courts. Entirely surrounding this central group are the exhibition galleries. Check room, catalogue counter and telephone booths have been located, of course, near the main entrance; and the galleries are so arranged as to provide natural and logical circuits, thus preventing confusion, while on the other hand numerous openings are placed so as to make all portions of the exhibition space intercommunicating where possible, thus obviating the necessity for following lengthy circuits in passing from one section to another.

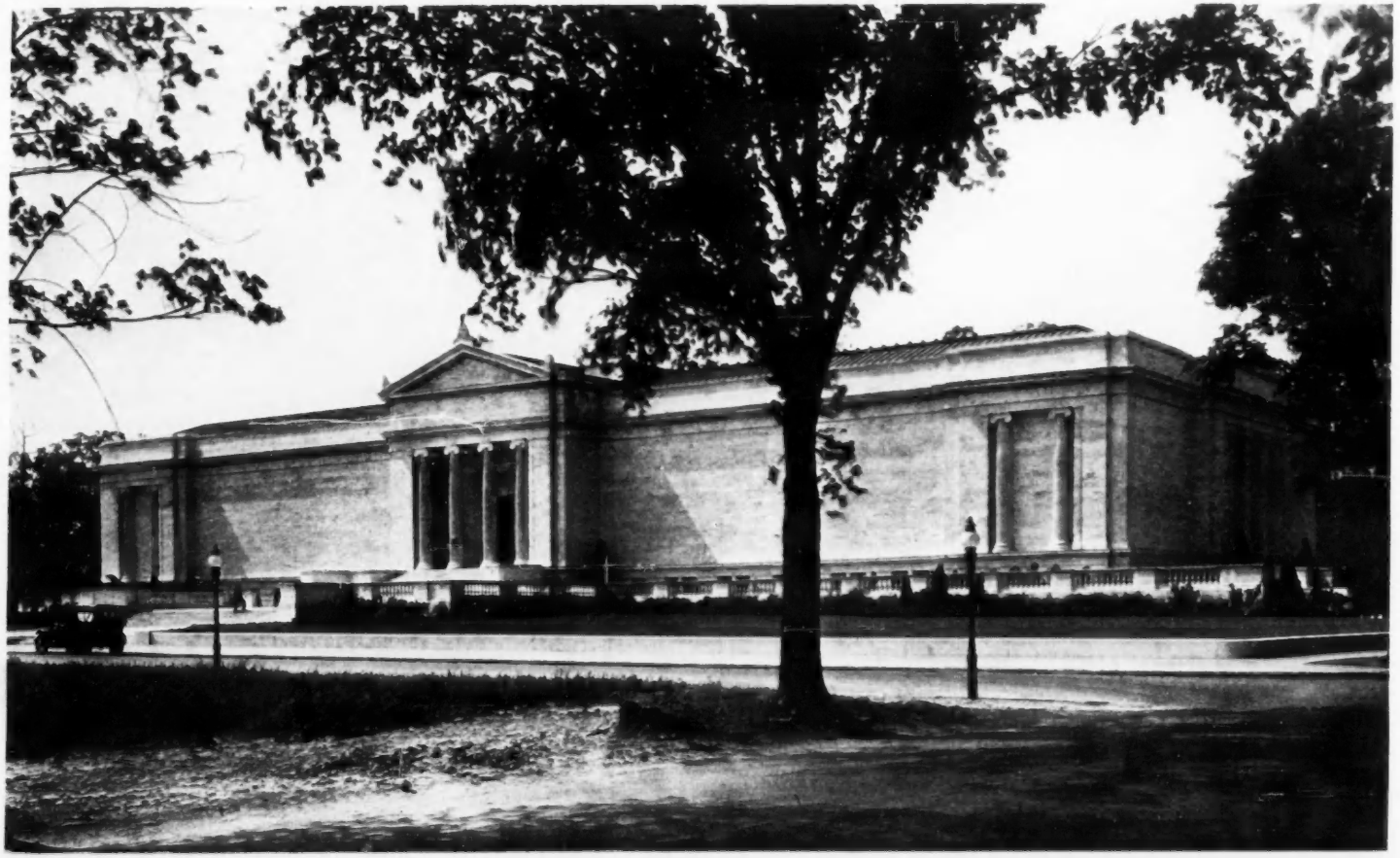
The rotunda contains examples of classic art. The east court is called the Court of Tapestries and Metal-Work, because of the tapestries which hang upon its walls and the collection of armor which it houses. The west court is a novel feature, being laid out as a garden with a fountain, walks, flowers and shrubbery, intermingled with examples of architectural sculpture, some of which (as they are secured in the future) will be let into the walls. The walls are of brick, devoid of ornamentation; and the court is intended by its very simplicity to provide a place of retirement, where the visitor suffering from what has been termed aptly "museum fag" can get away from exhibits and relax the mental tension incident to a study of, or even a casual view of a museum. The remaining rooms are devoted to the various collections which, though as yet comparatively small, have been carefully selected to cover as thoroughly as possible the various fields and epochs of art. In addition to the permanent collections, the inaugural exhibition has been materially enriched by the presence of valuable loans, effectually rounding out sections which otherwise might have been meager.

Aside from the function of providing public exhibitions, an extensive program of educational features has been planned by the Director, Mr. Frederic Allen Whiting, provision for which is found in the lecture hall, library, small photograph and lecture room, children's room, conference room and print room

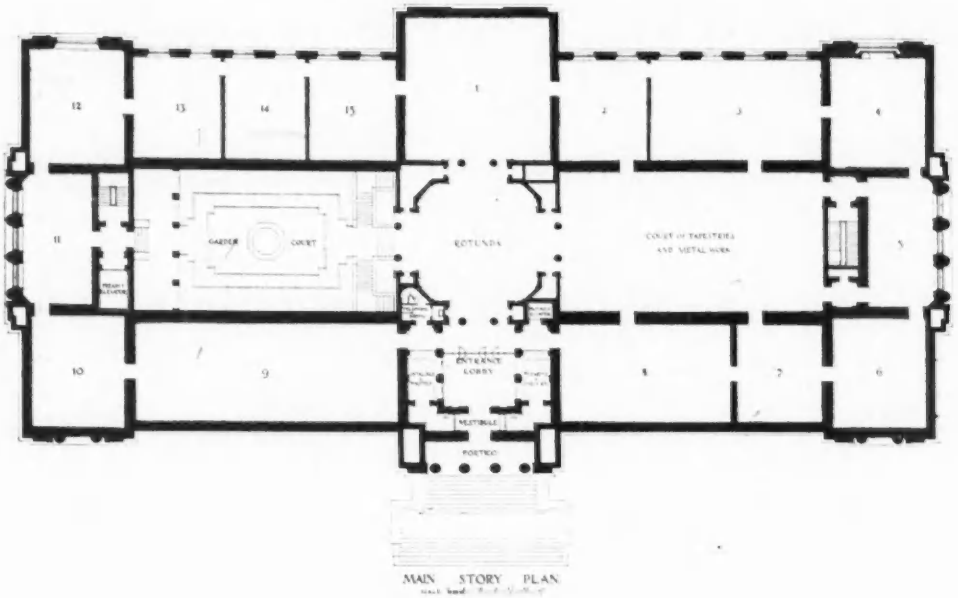
MAIN ENTRANCE—CLEVELAND MUSEUM OF ART. HUBBELL & BENES, ARCHITECTS.



PLAN OF GROUNDS—CLEVELAND (OHIO) MUSEUM OF ART. HUBBELL & BENES, ARCHITECTS.



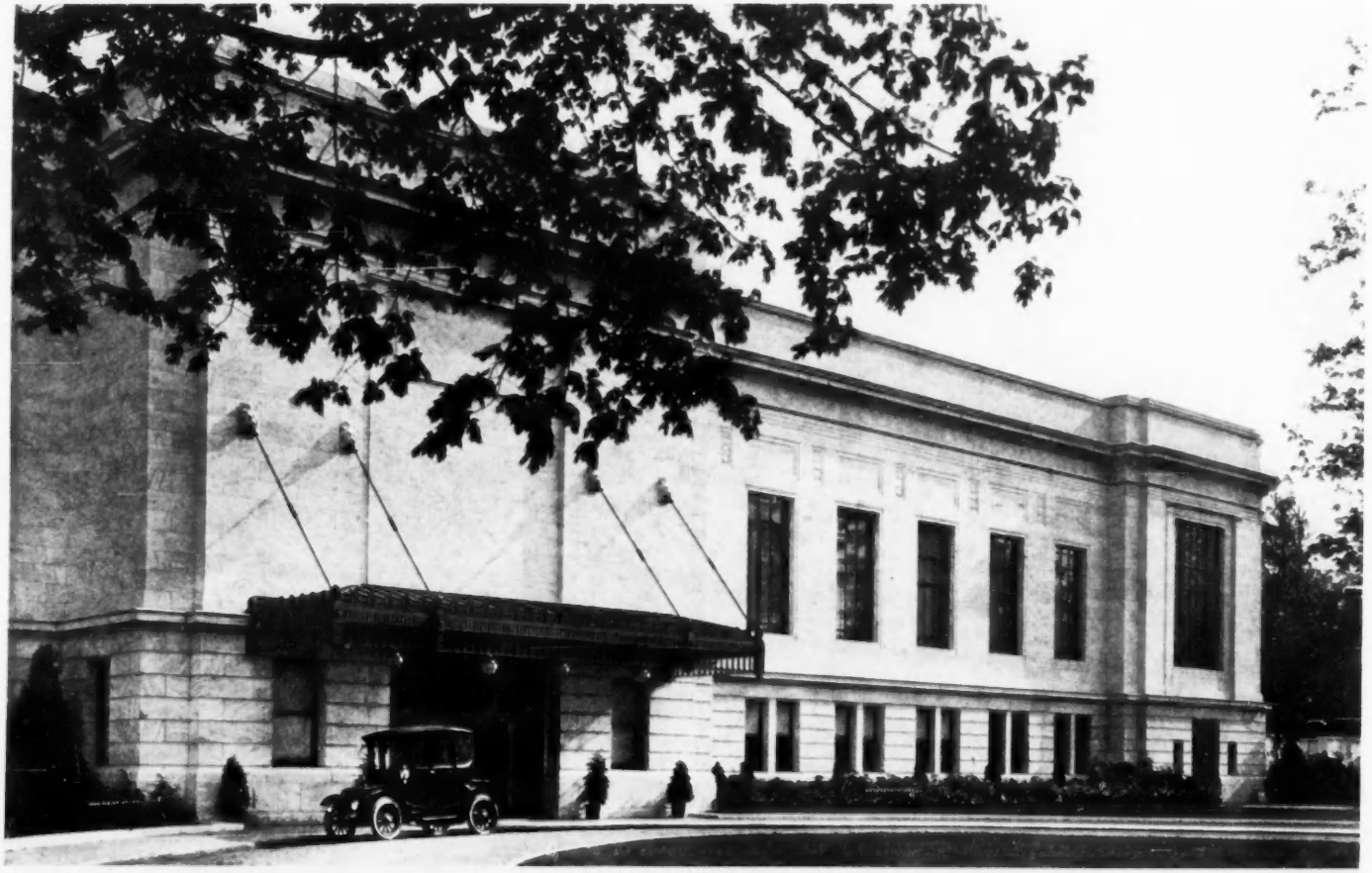
SOUTH FRONT—CLEVELAND MUSEUM OF ART. HUBBELL & BENES, ARCHITECTS.



FLOOR PLANS OF THE CLEVELAND MUSEUM OF ART. HUBBELL & BENES, ARCHITECTS.

SOUTHWEST CORNER—CLEVELAND MUSEUM OF ART. HUBBELL & BENES, ARCHITECTS.

VIEW FROM NORTHWEST—CLEVELAND MUSEUM OF ART. HUBBELL & BENES, ARCHITECTS.



CARRIAGE ENTRANCE—CLEVELAND MUSEUM OF ART. HUBBELL & BENES, ARCHITECTS.

GARDEN COURT—CLEVELAND MUSEUM OF ART. HUBBELL & BENES, ARCHITECTS.

on the ground floor, and some special exhibition rooms on the second floor. The work for children is to be a prominent feature and is to be carried on through co-operation with the art supervisors of the public schools.

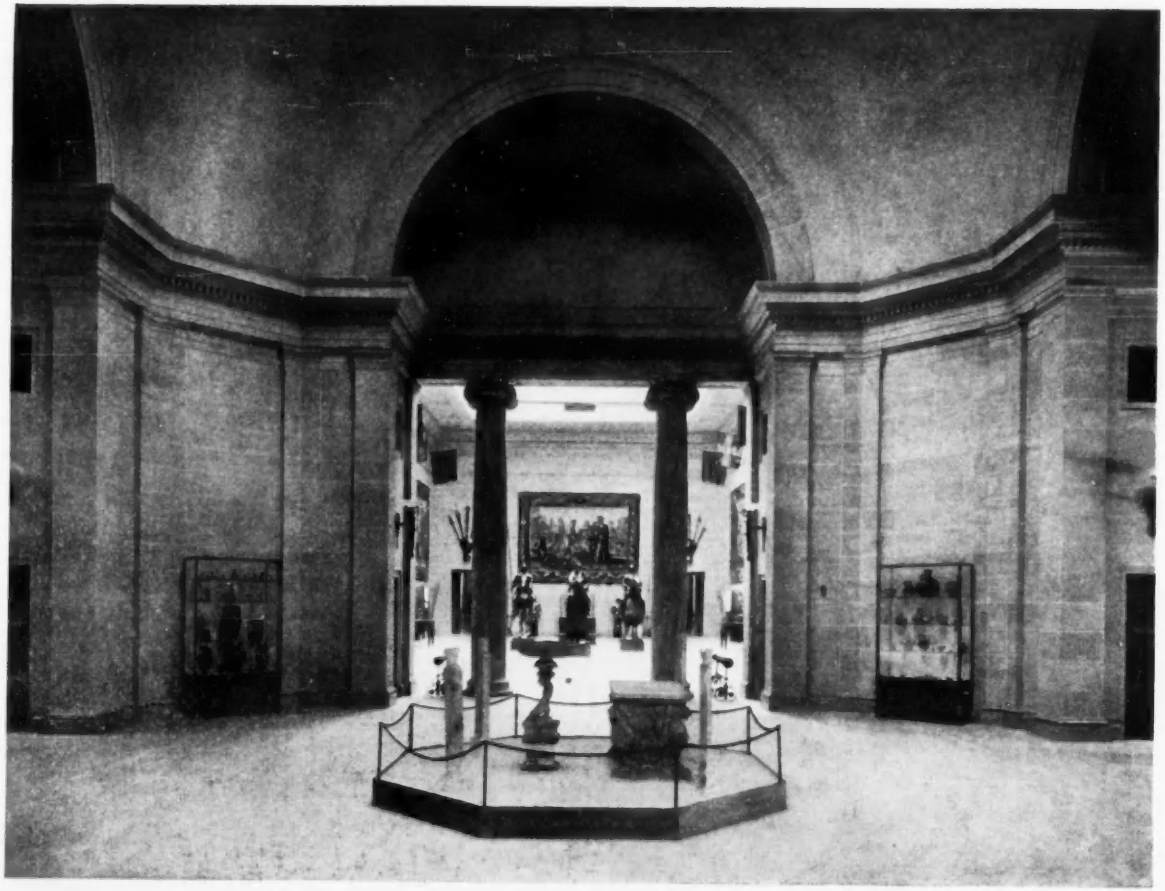
On the ground floor are located toilet rooms, rest room, lunch rooms and additional check rooms and telephone service. The western portion of the ground floor is devoted to the department of administration and maintenance. The administration offices are located so as to be readily accessible both to the public and to the other departments, while at the same time they are so shut away as not to be in evidence to visitors. Especial care has been taken to plan the official quarters so that, whatever the future expansion of the museum, the offices will always be maintained in their present location. To any one who has endeavored to locate the various officials in some of the large museums, the wisdom of a compact grouping of administrative departments will be thoroughly appreciated. The maintenance department, which is the workshop of the institution, has a separate service entrance at the northwest corner for receiving and shipping packages and for the entrance of employes and business callers. As the superintendent's office is located beside this door, all persons and articles entering the department are subject to his inspection. A receiving room provides space for packing and unpacking exhibits, and directly adjoining this is a large storage vault, where are kept such articles as are not for the time being on exhibition. Here has been installed a most ingenious arrangement for storing pictures. A series of vertical, sliding metal frames the height of the room are placed at right angles to the wall. These frames are covered with a heavy wire netting, upon which are hung the pictures which are to be stored. Being placed side by side, and hanging from an overhead track which permits of their being drawn forward easily like the drying racks in a laundry, the frames occupy a minimum of space, and yet the pictures upon them are as accessible as though hung upon the walls of a room. Each frame is numbered, so it is a simple matter to locate any picture in storage by referring to the office records. Inasmuch as this room is well lighted and easily accessible, all the pictures kept here are available for inspection at any time. This simple solution of the storage problem, which was studied out by members of the museum staff, has attracted most favorable comment from visiting museum officials. Close by the storage room is a small shop where various jobs of construction and repair are taken care of.

On the second floor are located the printing office and photographer's rooms. A freight elevator facilitates the handling of exhibits, and the photographic studio is placed in close proximity, so that new exhibits can be taken directly to it from the receiving room.

Every precaution has been taken to protect the building and contents from destructive agencies by the control of temperature and humidity, by the elimination of atmospheric impurities and by the installation of such features as steam pipes on the roof to melt snow, a device for draining off condensation from the under side of skylights and the protection of the central dome by a metal casing. A novel system of sprinklers has been installed above the skylights, by means of which the glass can be washed at will, while the spray of water can be used during hot weather as a means of controlling the temperature in the rooms beneath.

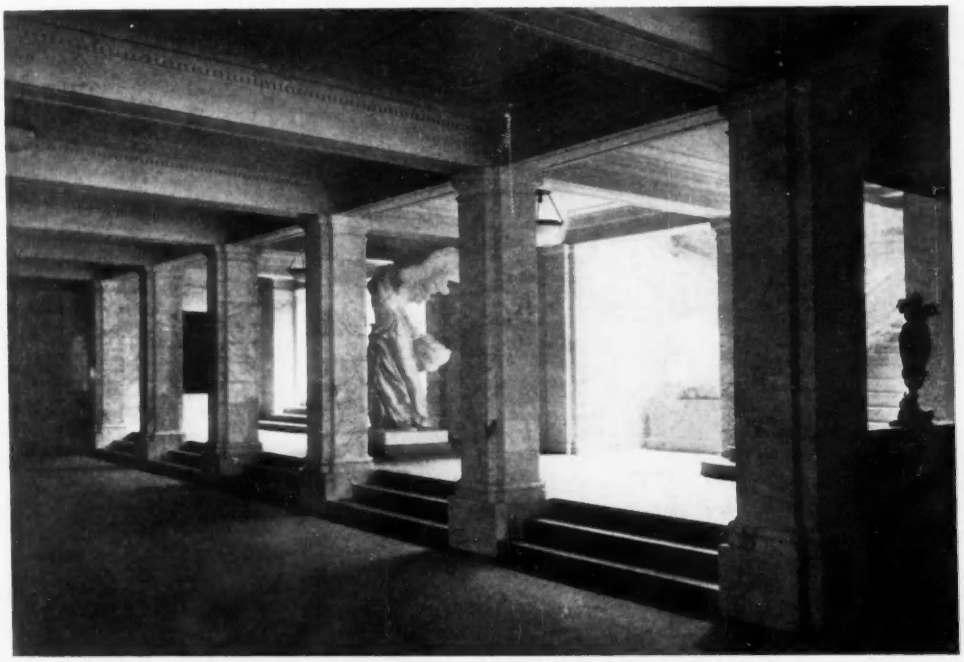
Perhaps the most original and interesting feature of the equipment is the lighting system used in the top-lighted galleries. Many difficulties are encountered in controlling this type of illumination, among which are the tendency to an excess of light on floor and ceiling, with a corresponding lack on the walls; where the light is most obviously required; the reflection in glazed pictures of brilliantly lighted portions of the room; and the loss of effect in many works of art, due to the lack of a pure daylight quality in the illumination, especially in the artificial light. There is also the element of direct sunlight to be provided against, which is usually controlled by means of sliding shades, which are awkward, unsatisfactory in effect and moreover perish-

GARDEN COURT—CLEVELAND MUSEUM OF ART. HUBBELL & BENES, ARCHITECTS.



ROTUNDA, LOOKING INTO COURT OF TAPESTRIES AND METAL WORK—CLEVELAND MUSEUM OF ART. HUBBELL & BENES, ARCHITECTS.

HOLDEN ROOM—CLEVELAND MUSEUM OF ART. HUBBELL & BENES, ARCHITECTS.



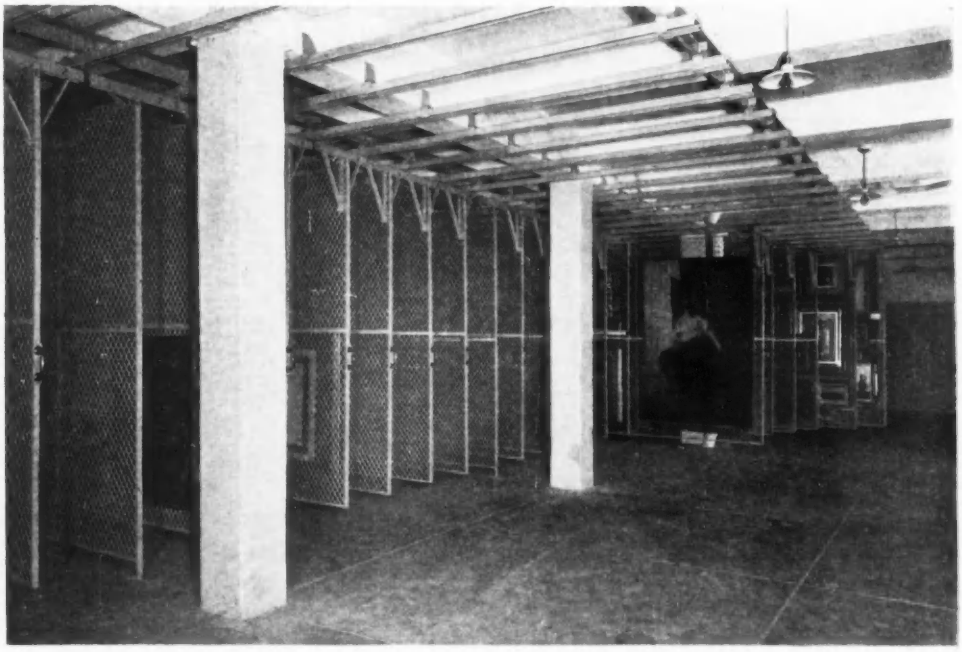
GROUND FLOOR FOYER—CLEVELAND MUSEUM OF ART.
Hubbell & Benes, Architects.

able; architectural features rising above the light well frequently cast undesirable shadows upon the skylight; and the artificial lighting is often objectionable because of a lack of diffusion and the too evident brightness of the light sources. In order to study these problems satisfactorily a scale model of one of the galleries was constructed and in this an exhaustive series of experiments was carried on, supplemented by observations in other museums.

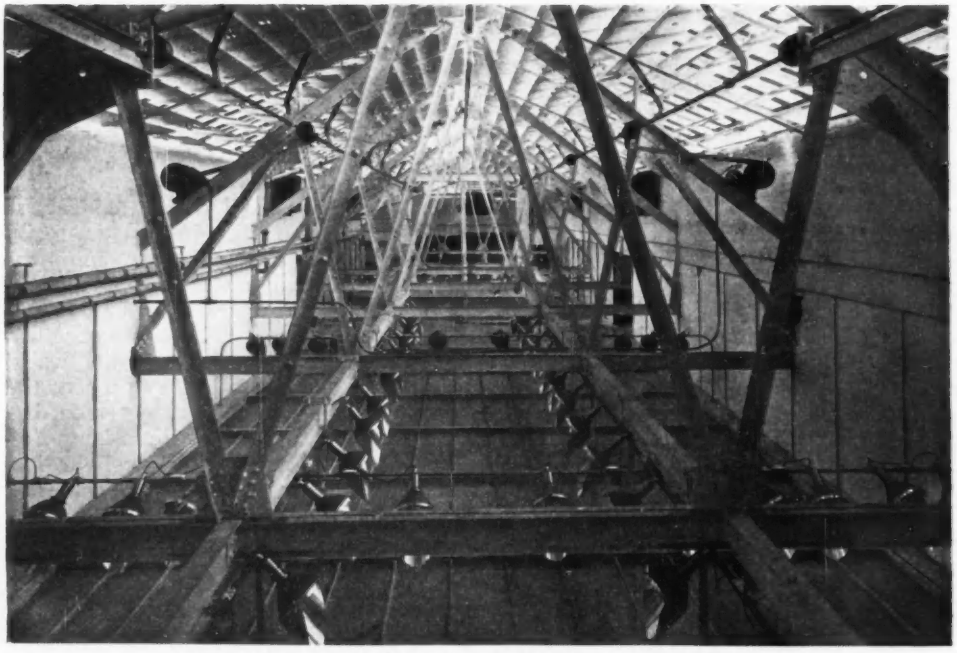
The control of quality, intensity, direction and diffusion of light was given careful study by the Lighting Committee, of which Dr. Edward P. Hyde was chairman. Many unexpected and interesting problems were encountered and it is to be hoped that the results of this research will be made public for the guidance of future builders of such structures. Certain it is that a familiarity with the principles upon which this system of light control was worked out would be invaluable in planning the proportions and construction of top-lighted rooms, and such familiarity should result in preliminary structural provisions which would greatly simplify the installation of the mechanism for light control.

The equipment consists of a series of adjustable metal louvers or shutters in the diffusing chamber between the upper and lower skylights, which are adjusted from the gallery below and by means of which the direction and intensity of illumination are controlled at will. As the position of the sun varies the angle of the louvers is adjusted by an attendant, so that a uniform illumination is maintained throughout the day. At night the light is thrown upon the lower skylight from lamps which are placed in scoop-shaped metal reflectors by means of which the light is directed toward the walls, while as far as possible they prevent the source from being too evident from below. By the use of daylight-lamps of bluish glass the effect of daylight has been so closely approximated that the transition from natural to artificial illumination in the galleries is scarcely observed by the visitors.

In the decorative treatment of the exhibition galleries a most commendable restraint is evident. With but one exception, the walls and ceilings are of the simplest, both in design and in color, the logical principle having been followed that the rooms are intended for the dis-



STORAGE VAULT—CLEVELAND MUSEUM OF ART.
Hubbell & Benes, Architects.



LIGHT-DIFFUSING CHAMBER—CLEVELAND MUSEUM OF ART.
Hubbell & Benes, Architects.

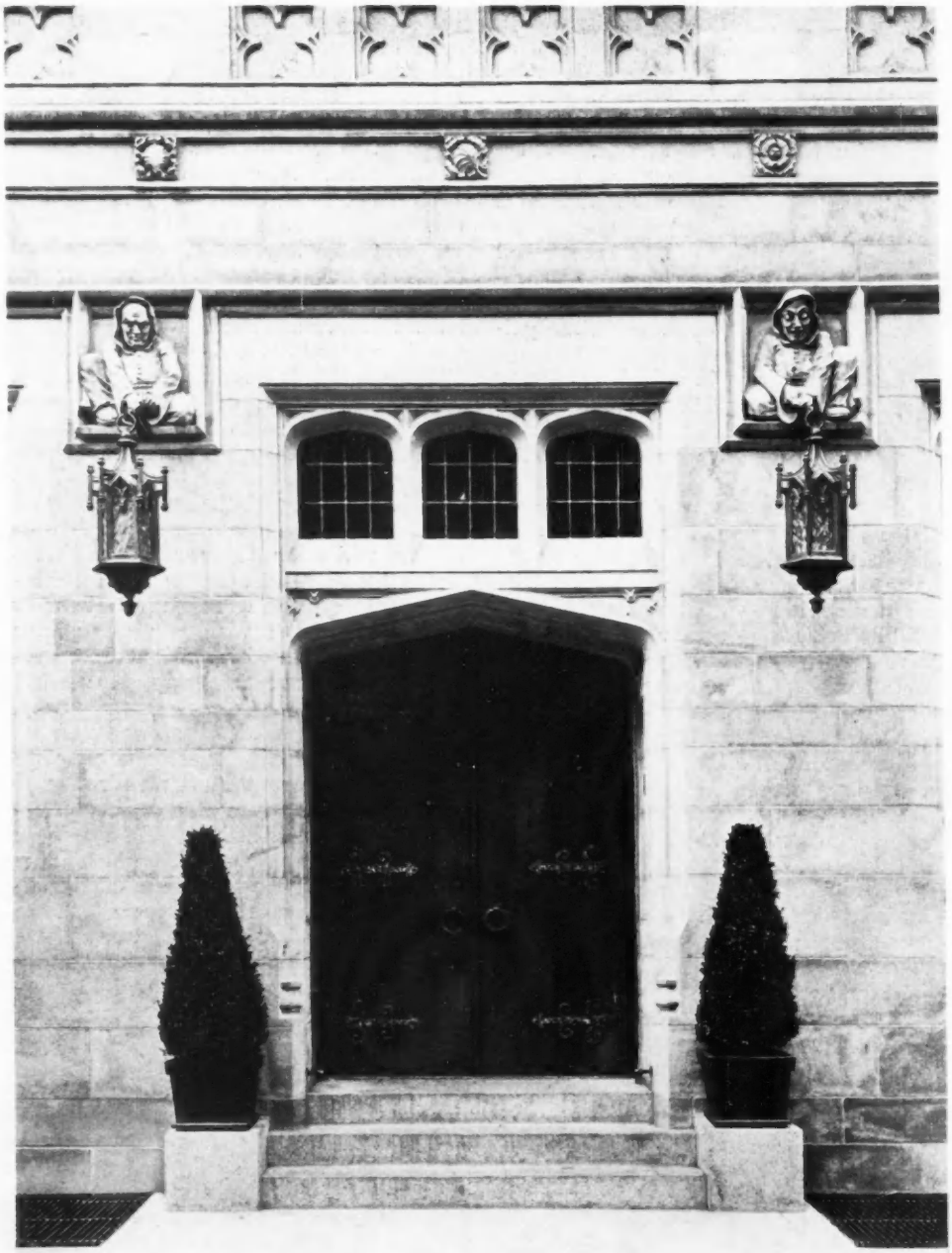
play of pictures and other works of art, not for the exploitation of decorative effects. A warm grey tone is used largely throughout the building, this effect in many of the rooms being obtained by the use of fabrics. Varying textures have been chosen for different rooms and some walls have been merely painted over rough plaster, so that a pleasing variety of effect is secured throughout the building without disturbing the harmony of color. A low wainscot of marble is carried throughout the galleries.

The one gallery in which a strong decorative note has been struck is known as the Holden Room; and here the architectural and decorative treatment of the room was provided for by the donor, who desired that the memorial collection of Italian paintings which it houses should be placed in an environment true to the character of the Italian school. The treatment, which was the work of Mr. Arthur Loomis Harmon, consists of Travertine trim, velvet wall hangings, a window in leaded glass and a rich stucco ceiling decorated in polychrome.

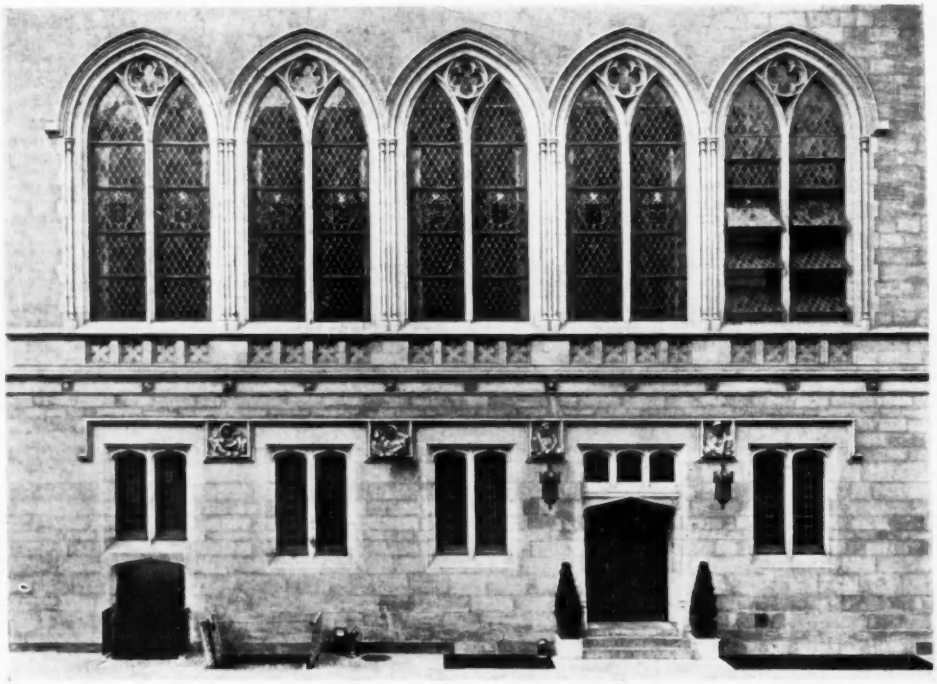
Taken as a whole, the charm of the building is due in a large measure to the judgment displayed by the architects in depending for architectural effect upon good proportion, good material and well studied detail, rather than upon the lavish use of ornament, which the inexperienced designer falls back upon so frequently as a cloak to hide the deficiencies of his design.

The location of the museum among the trees of Wade Park, away from the smoke and dust of the downtown district, is one more illustration of the effort which Cleveland is making to develop along logical and artistic lines. Among the first of American cities to adopt definite plans for the grouping of its public buildings, it was at one time strongly urged that the new Art Museum be made a part of the great group of public buildings which will eventually surround a mall in the downtown district. Wiser counsels prevailed, fortunately, and a new center of educational and ecclesiastical institutions is now being developed in the neighborhood of University Circle and Wade Park. Already the buildings of Western Reserve University, Case School of Applied Science, the Western Reserve Historical Society, the Cleveland School of Art and the Cleveland Museum of Art make of it an educational center. The Euclid Avenue Presbyterian Church, which was illustrated in the January, 1911, issue of The Architectural Record, forms the nucleus of a church group, of which the plans for three important churches are now under consideration.

It is to be hoped, that with the development of this important group of institutions, which is adjacent to one of Cleveland's choice residential districts, a comprehensive scheme will be adopted for so co-ordinating the various undertakings that a harmonious *ensemble* will be produced. A formal, arbitrary scheme has been adopted in the downtown group, which will, when completed, produce an imposing Court of Honor. In the University Circle group such uniformity of style and placing would be neither possible nor desirable, but it would be possible and most desirable that the various interests involved so co-operate and co-ordinate their projects that a general scheme may be evolved which will unite these varied undertakings under one comprehensive plan. At the National Conference for City Planning held recently in Cleveland a drawing was exhibited by Hubbell and Benes in which the possibilities of this grouping were shown and it is to be hoped that ultimately some such plan will be adopted and that, whatever styles of architecture may be decided upon for the different buildings, a standard of design will be maintained as high as that of the Art Museum.



MAIN ENTRANCE—THE FRIARS CLUB, NEW YORK. HARRY ALLAN JACOBS, ARCHITECT.



DETAIL OF FACADE—THE FRIARS CLUB, NEW YORK.

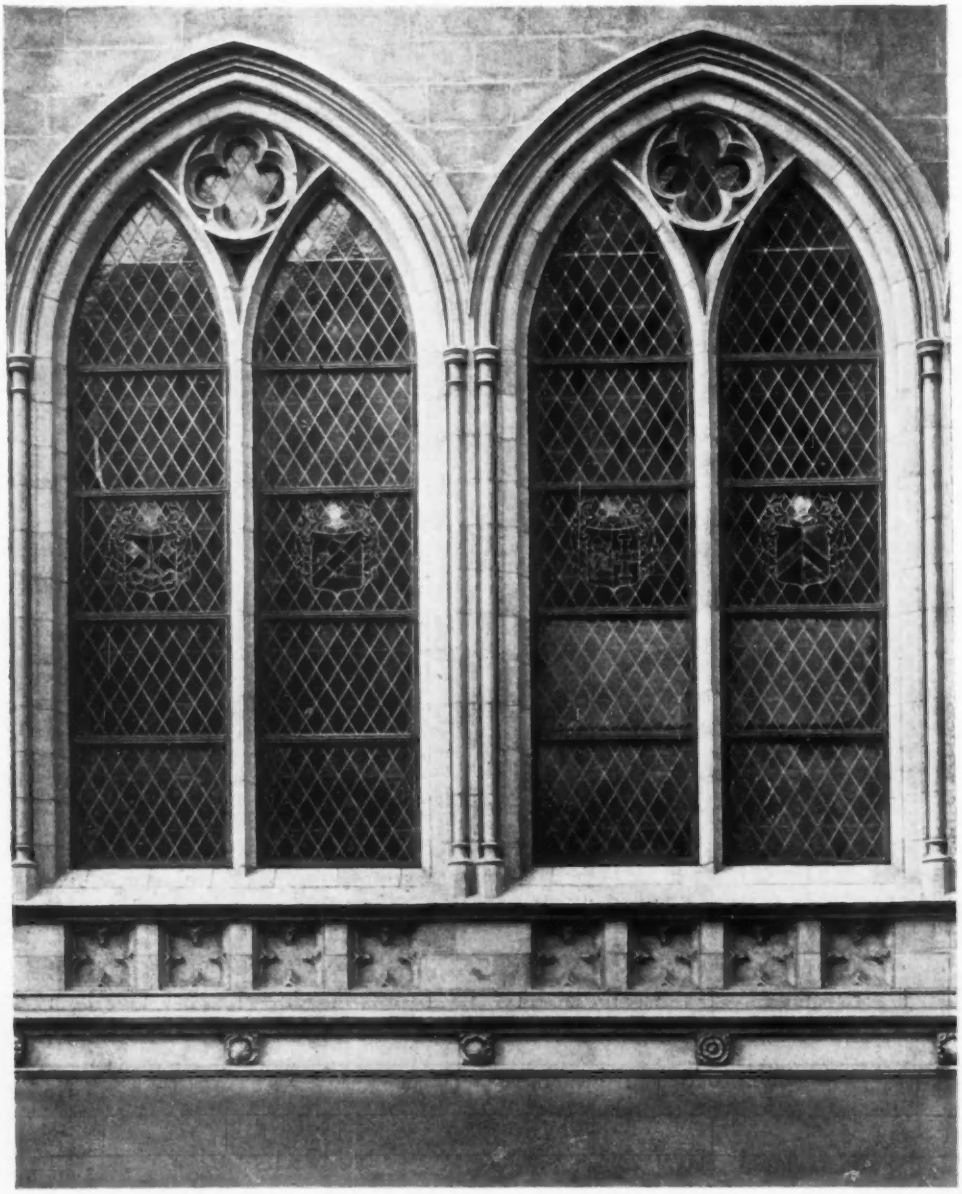
The Friars Club New York

Harry Allan Jacobs, Architect

By Harrison Fisher

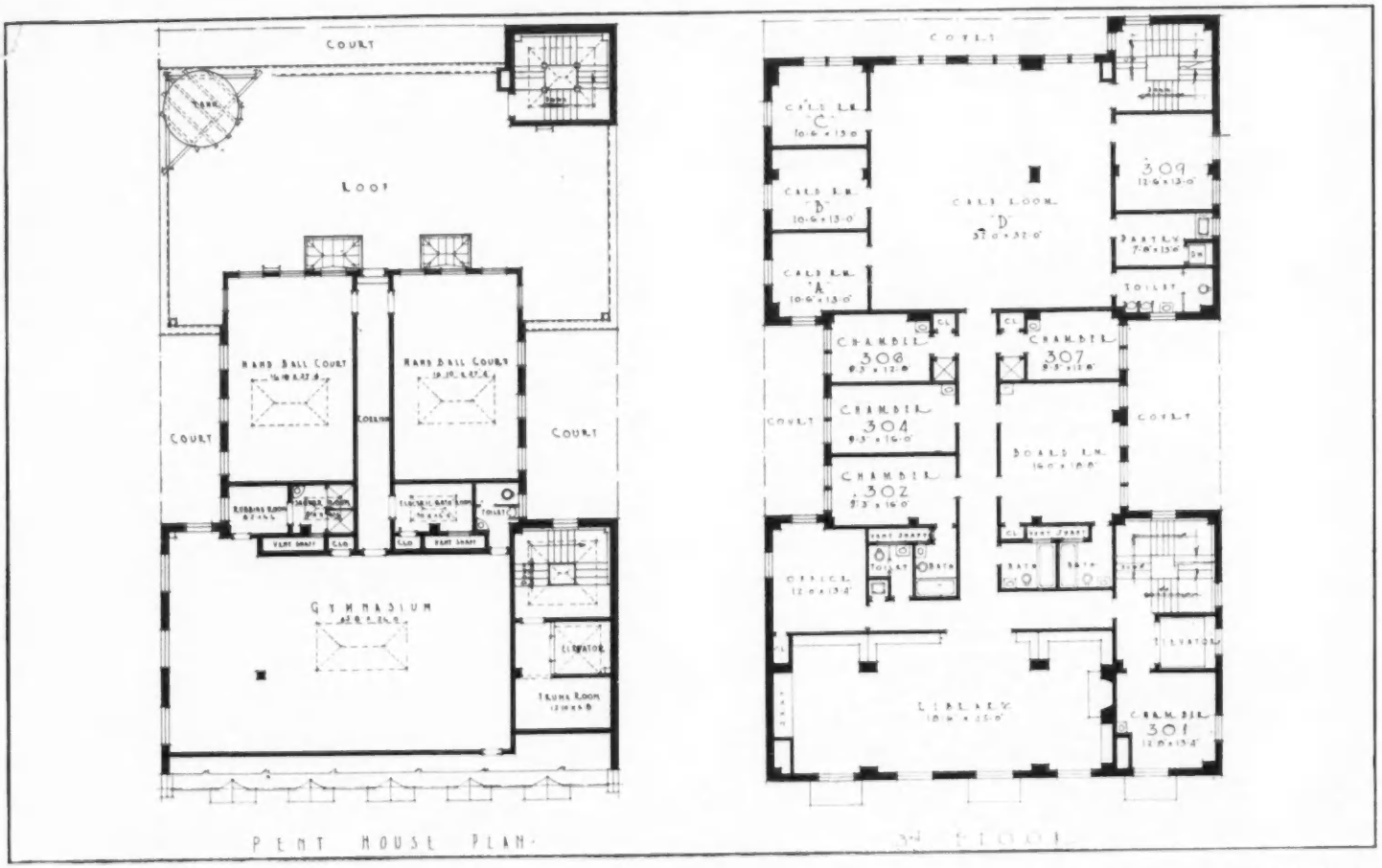
IN designing the new building for the Friars Club, the architect, Harry Allan Jacobs, had the problem of contriving a modern building in the character of a monastery, as a home consistent in every detail for the "Friars." The monasteries which one always has in mind are either Mission type or old Gothic. These were very low buildings, so that it was an extremely difficult problem to give to a seven-story building the character desired.

The style of the exterior is the Tudor Gothic, the large windows on the second floor frankly expressing the dignified banquet hall, which is the chief feature of the building. Here the Friars will have their entertainments. Naturally, being a club whose members belong mostly to the theatrical profession, this room is the centre of the entire plan. Here the Friars will continue to give their little skits, impromptu entertainments and the like, to members and friends.

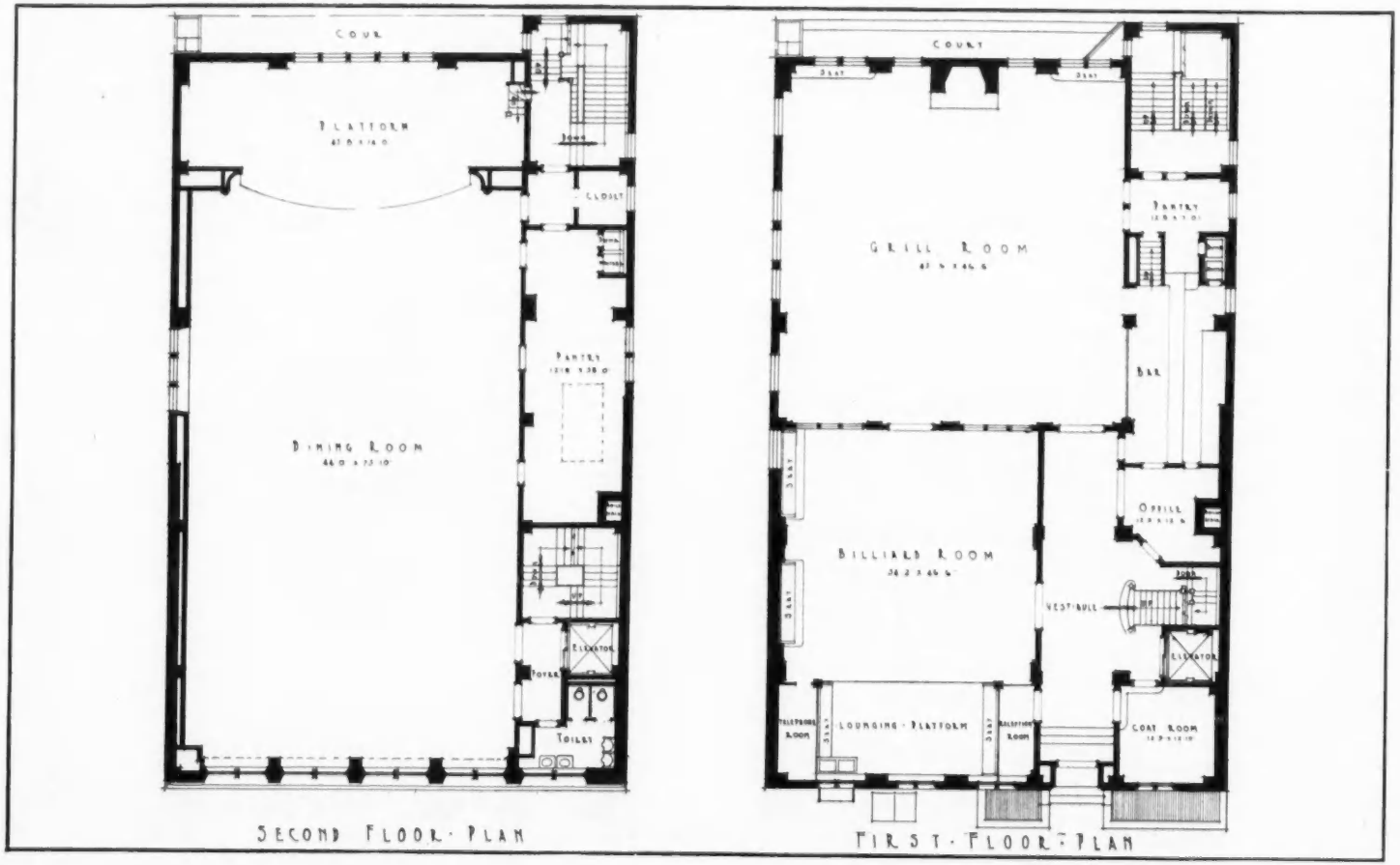


DETAIL OF WINDOWS—THE FRIARS CLUB, NEW YORK. HARRY ALLAN JACOBS, ARCHITECT.

THE FRIARS CLUB, NEW YORK.
HARRY ALLAN JACOBS, ARCHITECT.

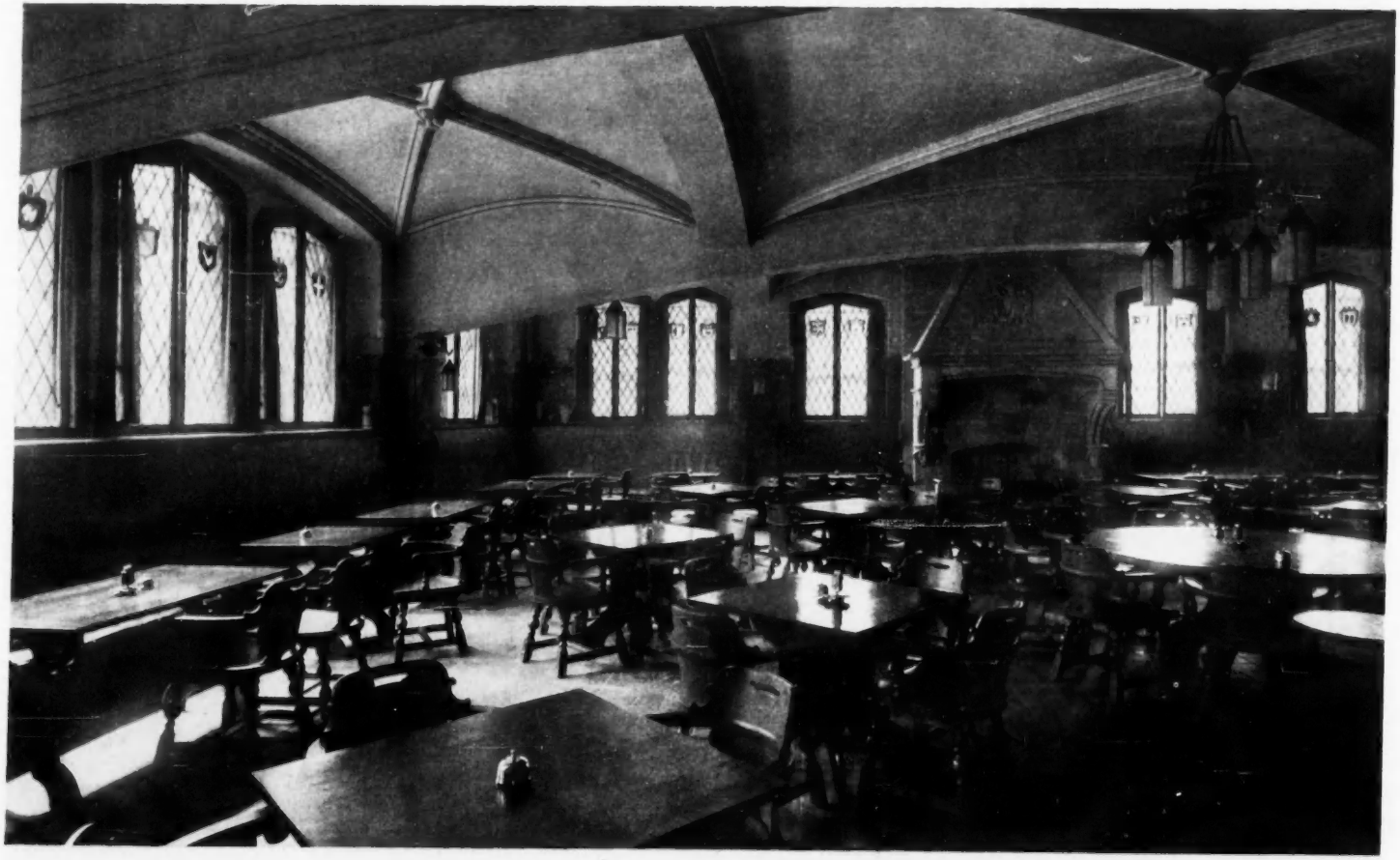


THE FRIARS CLUB, NEW YORK.
HARRY ALLAN JACOBS, ARCHITECT.

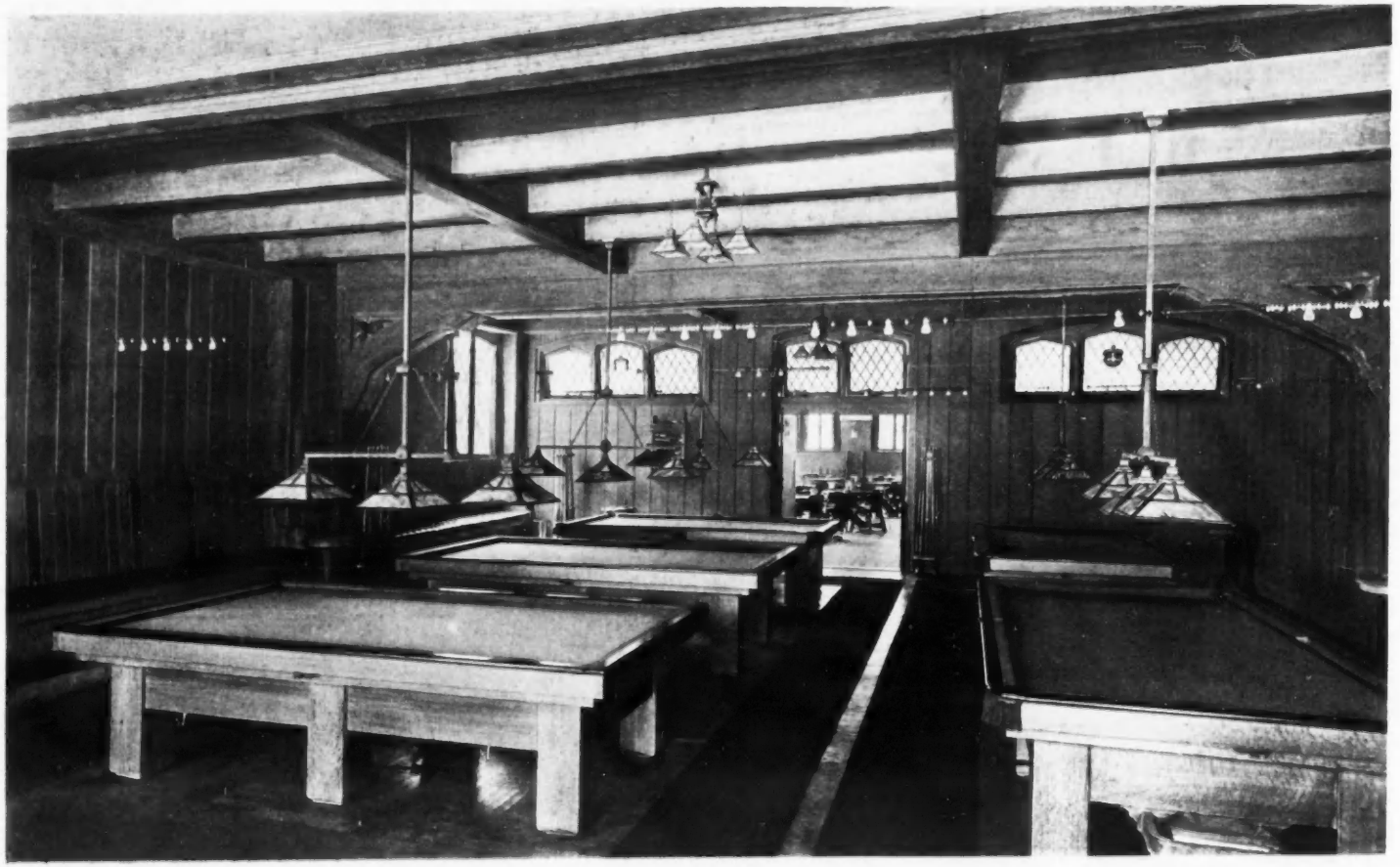


THE FRIARS CLUB, NEW YORK.
HARRY ALLAN JACOBS, ARCHITECT.

VESTIBULE, LOOKING INTO GRILL ROOM—THE FRIARS CLUB, NEW YORK. HARRY ALLAN JACOBS, ARCHITECT.



GRILL ROOM—THE FRIARS CLUB, NEW YORK. HARRY ALLAN JACOBS, ARCHITECT.



BILLIARD ROOM—THE FRIARS CLUB, NEW YORK. HARRY ALLAN JACOBS, ARCHITECT.

AUDITORIUM ("DINING ROOM" ON PLAN)—THE FRIARS CLUB, NEW YORK. HARRY ALLAN JACOBS, ARCHITECT.

The architect has succeeded in making the building appear low in spite of the fact that it is seven stories tall, with very high ceilings, the banquet hall being twenty-five feet high, and the gymnasium, which is behind the mansard roof, sixteen feet high. Had the architect erred by not keeping his main cornice line down, the effect might have been that of an apartment house. By the happy expedient of a low cornice the main horizontal shadow is brought as near to the eye as possible.

On the first floor, one enters through a very attractive cloistered corridor, with vault ceiling. The walls, floor and groins are treated with Moravian tiles of different shades of red, and with inserts of tiles in different patterns. The plaster panels between the tiles are painted in the same shade as the tile, giving a very soft and subdued effect. Opening off the cloister or lobby are the billiard room, the bar and the grill room. The billiard room has the woodwork going from the floor to the beamed ceiling. The oak in this room has been fumed. The grill room has been given a crypt effect with groined vault ceiling, the wainscoting being about seven feet high; the ceiling and the wall above the wainscoting are of rough plaster stained in an antique gray.

The walls of the big banquet hall, on the second floor, have been carried out with pointed arches, in conformity with the idea that is expressed in the front façade, the pointed arches forming a cloister effect. The ceiling consists of hammer beam trusses at irregular intervals, supporting the beam ceiling, with an effective treatment in dull colors, polychrome and gold. The proscenium arch is carried out in stone, like the rest of the arches in the room, and the spandrils between the arches are painted in gray Gothic blue with a stenciled Gothic border.

The library, on the third floor, has been carried out in dark brown oak, extending from the floor to the ceiling, in the Elizabethan style.

There are forty-two bedrooms, each bedroom having its own private shower or bath, and on the top floor are the gymnasium, two handball courts and a roof garden.

The building has elevator service, and the mechanical equipment is modern in every respect. In the basement are the kitchen, barber shop, wine room, boiler room, storeroom, etc. The plan of the building, it will be seen, is notably compact, a clever solution of the difficulties presented by a narrow site.

CHVRCH PLANNING IN THE VNITED STATES

Part III

The Sunday School Room in Its Relation to the Audience Hall

By Richard Franz Bach

TEACHING of religious truths to children and catechumens has always found an important place in faiths producing both liturgic and non-ritual or denominational plans. The ritual churches used the body of the nave or an adjacent chapel for this purpose; certain of the ritual forms of worship now also use separately built and specifically arranged rooms for classes devoted to minors. The denominational church, however, is to be chiefly credited with the pronounced development of this field of religious effort, which it found of extreme significance to the success of its own propagation. It soon discovered that special purposes are best served by special accommodations; and for a space of about a half century, but more especially within the last thirty years, the efforts of architects and interested laymen alike have been enlisted to set down adequate solutions along various lines that would account for the problems involved, both in the way of architectural treatment and in that of a feasible plan of the space to be devoted to the teaching of children. The problem was further complicated by its two-fold aspect, that of its own inherent effectiveness as a teaching branch of the church, and that of its spiritual and physical connection with the main body of the congregation, its audience hall and pulpit. We must therefore account for Sunday School quarters in all denominational plans, even though they be not given additional ground area for their own use. The interior plan and design of these quarters have already passed through a number of refining stages, to be outlined and illustrated subsequently; our present task shall be to consider the Sunday School in its plan relation to the body of the building, or more narrowly, to the audience hall.

The problem has not always been granted the study commensurate with its importance, this being due in great measure, no doubt, to the fact that for a long time the Sunday School was in general opinion negligently considered nothing more than a regular form of church service for children, the attitude being largely that of segregating the children so as not to encumber the devotions of the adults, rather than that of properly teaching the children so that their numbers might act as a feeder to the adult congregation. The more modern conception of this branch of religious activity came with a reasoned valuation of the word *school* and a system of instruction, later of academically graded instruction, was introduced and promptly led to plan modifications to meet scholastic or pedagogic requirements. When it was finally learned that congregations drew their main support in point of converts and additions—eighty per cent or more, I believe—directly from the ranks of the Sunday School, while only twenty-five per cent of the budget appropriations were granted for its support, the realization of the true scope of this phase of church work prompted a close study of the conditions of the problem in hand, with resultant benefits to be indicated in this and the following paper.

It should be borne in mind throughout our discussion that the Sunday School is

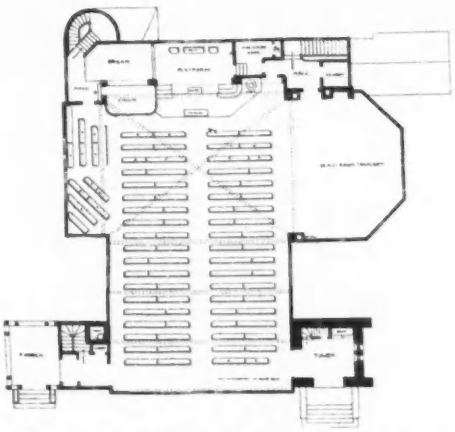


FIG. 1. PRESBYTERIAN CHURCH, WEST NEW BRIGHTON, S. I.
Stephenson & Greene, Architects.

not bound to the skirts of tradition in architecture. It is entirely beyond the pale of ecclesiology, except in so far as this has formed part of its own creation. It needed to subscribe to no crystallized set of forms and its plan was a pliable thing in the hands of each new designer. Its exterior design, of course, was led more or less into the prescribed fields already favored by the major part of the church fabric, but this soon became an inexpressive cloak—at times, a disguise—for an interior and a plan that was not part of its growth, as a multitude of examples in this country will fully demonstrate. In fact, the denominational church as a whole, as we have seen elsewhere, cannot count many centuries in its own history and has not in its present highest effectiveness any formidable background of tradition to give it glamor and the solemn assurance of tried antiquity to command its plan disposition. For this reason, which by many is regarded as nothing more than the unreason of youth, the planner has had a *tabula rasa* upon which to construct a suitable and essentially utilitarian structure, devised to meet well defined but not stylistically limited needs. The garment of design took its color from the church edifice itself and the newness of the planning problem may be said to have retroacted upon the major part of the building in turn, favoring a certain freedom and experimentation—not infrequently a heretical looseness—that has led to rapid progress and incidentally to its concomitant vagaries produced by the unbridled architectural tyro.

Single Level—Combination Plan.

The small church, or the poor one, is driven to provide for its Sunday School in the audience hall proper, possibly in a chapel or in an exaggerated transept, galleries or other minor masses of the building, frequently in the actual seatings of the congregation itself. (Fig. 1.) When topographical conditions permit, such churches are apt to resort to the excavated space beneath the main floor to eke out available area and to eliminate conflict between the two bodies of the church members, and a dry basement may be provided, this having become and in many cases still remaining the stock solution of the Sunday School problem due chiefly, no doubt, to excessive land values in cities. In fact, church design in numerous instances is controlled by this method of accommodating the Sunday School, so that we have buildings with steep approaches to assure sufficient window area for the basement story, thus achieving ugly exterior designs, poor entrance facilities for the main hall and for the secondary floor, as well as a degree of danger in time of mass exit.

But let us restrict ourselves for the moment to the single level for the entire building. Granted that the congregation can command sufficient funds and the Sunday School has a sizable registration roll, our next condition immediately affects the plan of the building, provided it is intended to retain both parts of the edifice on a uniform level. This condition is the double use to which Sunday School rooms are almost invariably put. The space being large and generally unencumbered, it offers opportunities for entertainments and meetings involving large numbers, bazaars, and the like. Therefore the audience hall and the Sunday School room are frequently brought into juxtaposition, so that the volume of one may abet that of the other when the necessity for increased space arises, and movable partitions between them may

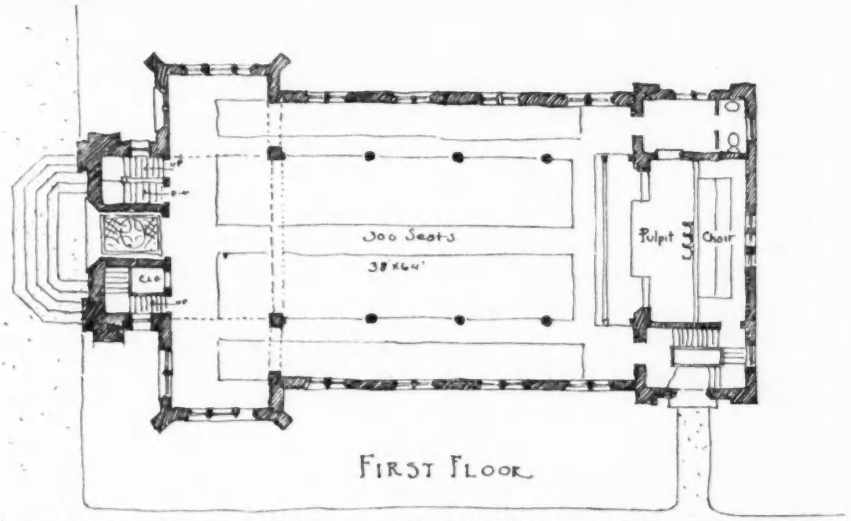


FIG. 2. CHURCH AT KATONAH AVENUE, NEW YORK CITY—MAIN FLOOR PLAN.
Milton See & Son, Architects.

make it possible to throw both rooms together. This opportunity of increasing the capacity of the small church must be considered a decided advantage, often to be counted upon, since it eliminates galleries which require high exterior walls, and since it does not make necessary an initially large plan for the audience hall which offers a troublesome void for both ministers and congregation. If this practice is followed the plan is really that of a commodious and adjacent smaller church ready to be added to the church proper when occasion may demand. The dividing wall is in such cases a rolling or sliding or coiling or some other type of collapsible partition. A number of mechanical devices have been arranged to

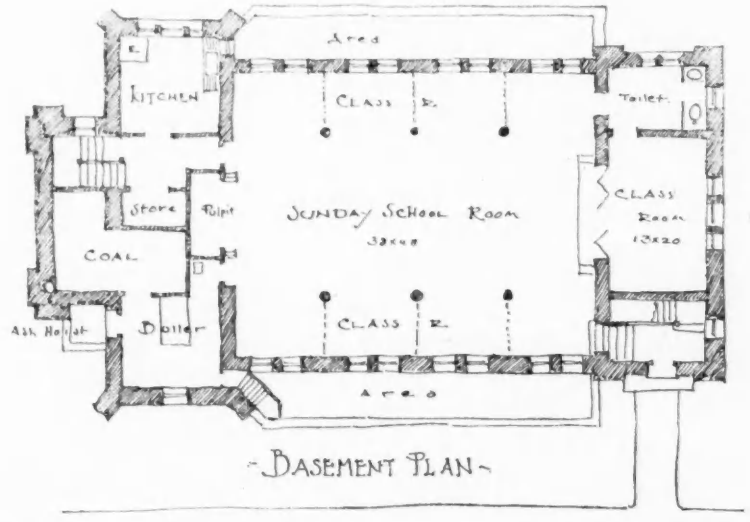


FIG. 2a. CHURCH AT KATONAH AVENUE, NEW YORK CITY—BASEMENT PLAN.
Milton See & Son, Architects.

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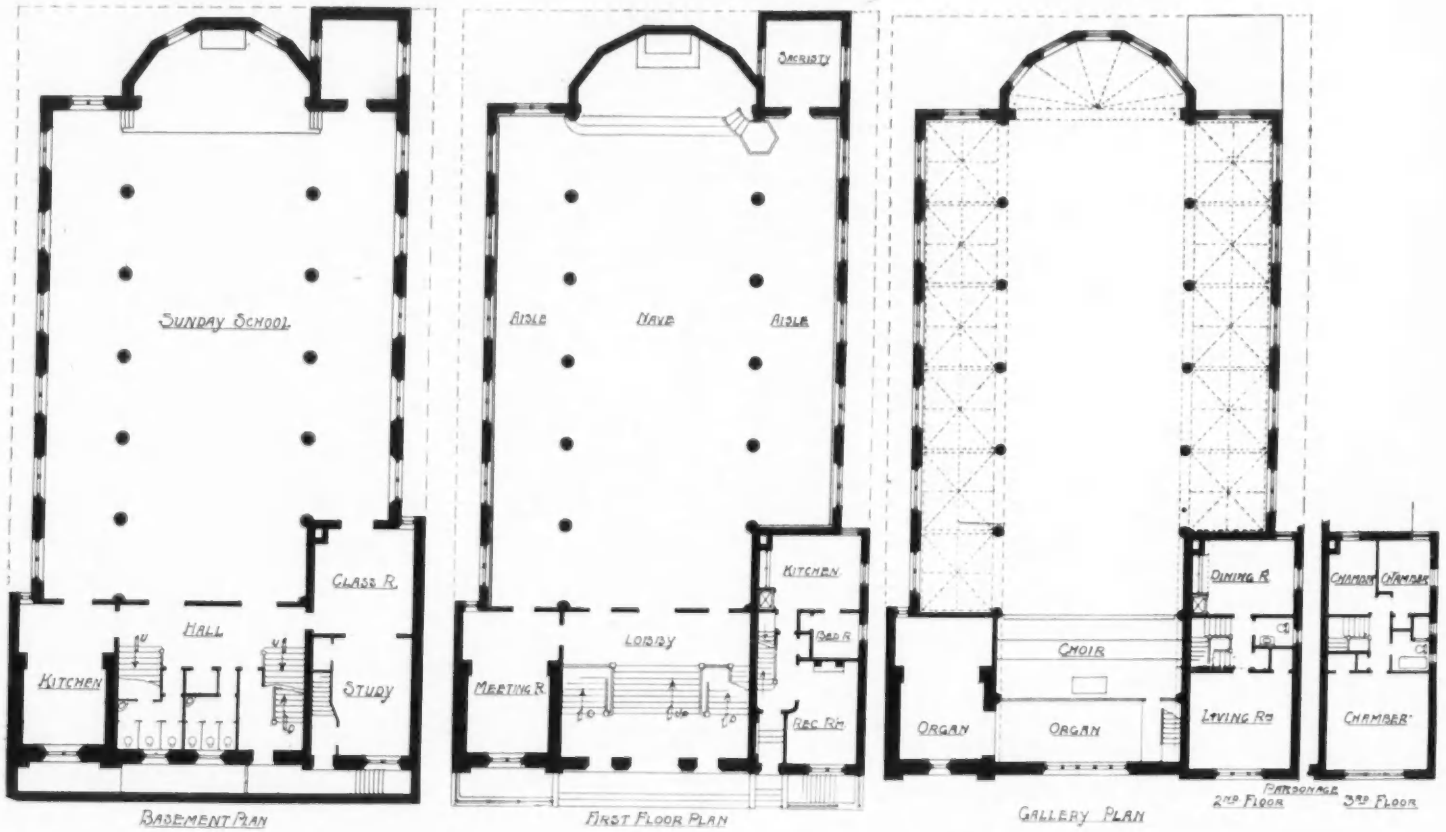


FIG. 3. GERMAN EVANGELICAL LUTHERAN CHURCH, NEW YORK. GEORGE W. CONABLE, ARCHITECT.

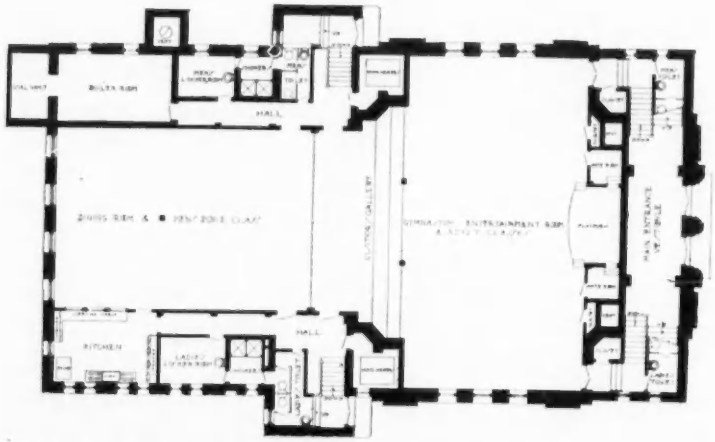
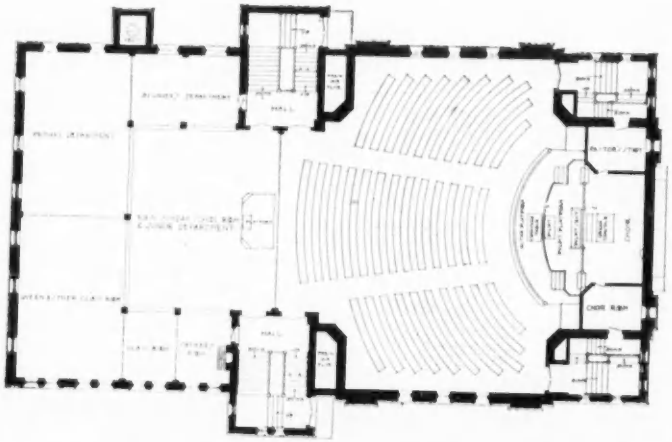
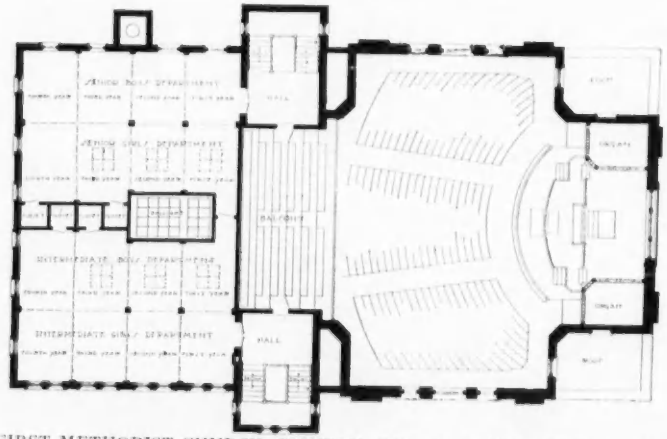


FIG. 4. FIRST METHODIST CHURCH, CLINTON, IND.—BASEMENT PLAN.
S. R. Badgley, Architect.



FIRST METHODIST CHURCH, CLINTON, IND.—MAIN FLOOR PLAN.
S. R. Badgley, Architect.



FIRST METHODIST CHURCH, CLINTON, IND.—GALLERY LEVEL PLAN.
S. R. Badgley, Architect.

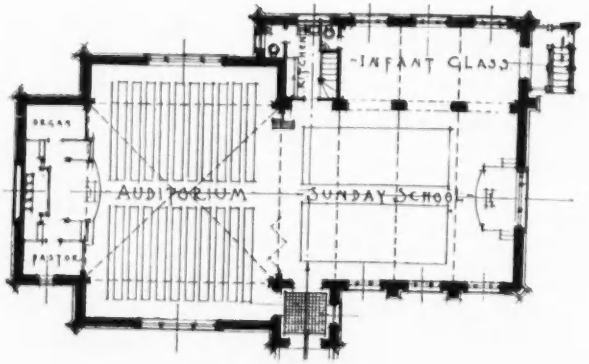


FIG. 5. FORT WASHINGTON COLLEGIATE CHURCH (BEFORE BEING ALTERED AND EXTENDED).
Nelson & Van Wagenen, Architects.

facilitate the handling of this partition, which is invariably of considerable size and weight, and which may not in the end be given too slight a character, if its value as a wall is to be retained. In this form of combination plan, however, the pastor's position still remains the focal point and the plan therefore approximates a polygon of four or more sides, or that of a cross of equal arms, and both of these possibilities become somewhat ungainly if the congregation is a large one. What is more, the need for sloping the floors to aid the vision of the congregation may throw difficulties in the way of the easy combination of the two rooms because of differences in level, so that in cases of sloping floors the two departments are not usually brought together in this fashion and the Sunday School will be found in an adjacent or practically separate structure or else on a different floor level, above or below the main auditorium, unless both have bowled floors, an arrangement offering improved acoustics. Of course, the small church plan is not so apt to encounter these difficulties.

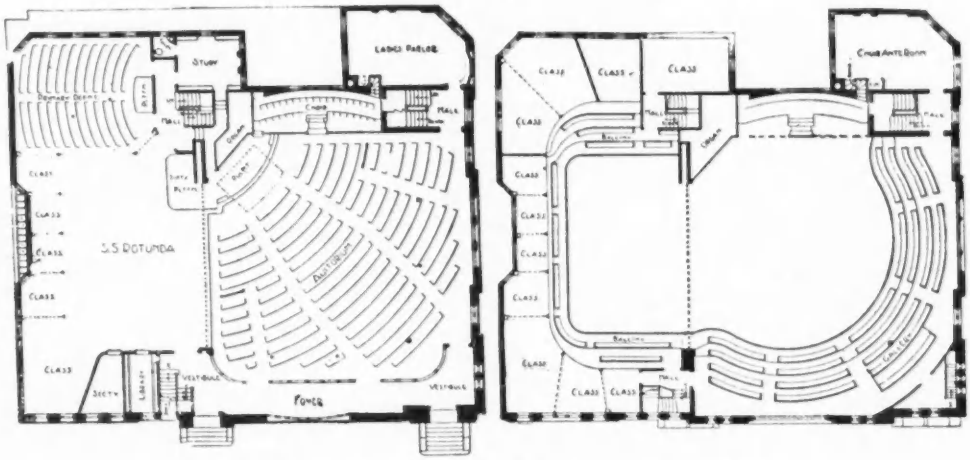
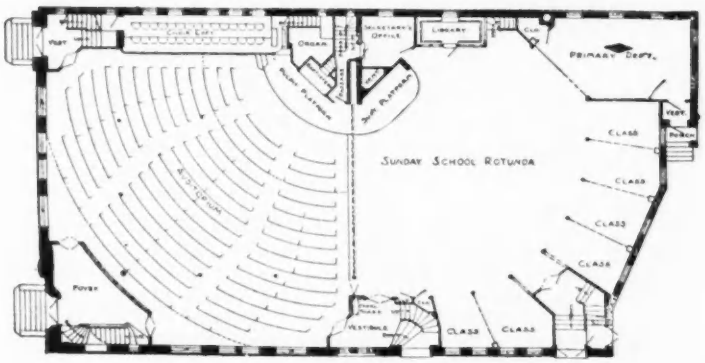


FIG. 6. ARK CONGREGATIONAL CHURCH, NEW YORK CITY.
Kramer & Hamilton, Architects.

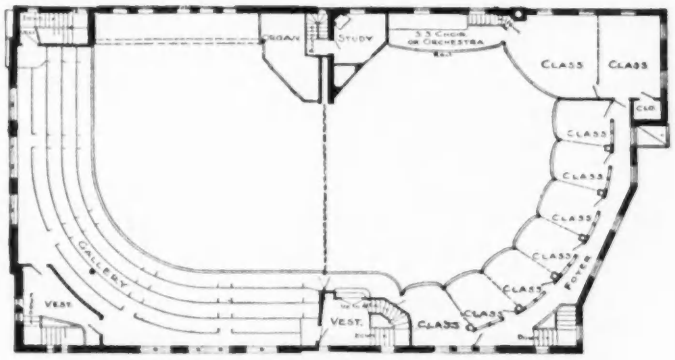
The most logical method of arranging a combination of the two rooms suggests itself at once as that of placing the Sunday School space directly behind the audience hall, on the same axis, and facing in the same direction. The focal point of the former would then appear at the back of the audience hall and against its rear wall, which would be the movable partition above referred to. The platform of the former would likewise be movable, built on rollers or even made of various sections to be assembled and set up, and the whole dismantled or rolled aside when the partition is raised. When the two rooms are thus made into one, the pulpit of the audience hall proper would control an increased space of great depth and capacity, the latter being practically doubled. (Figs. 4, 5.) This arrangement offers the decided advantage that the single pulpit thus serves both rooms without reducing the visibility of the speaker,—although somewhat hampering hearing in larger buildings,—and seatings are arranged with this end in view. It may be said, however, that the Sunday School loses to a great extent the sense of completeness, independence and isolation and that by this and other similar schemes of combination all or the greater part of one wall is rendered useless for the Sunday School, except for platform purposes, and at the same time provides a generally ugly rear wall for the audience hall. What is more, if the full height of the rooms is to be involved when both are opened into one another, it will not be possible to provide a forward gallery in the audience hall; although in wide and compact buildings—and to improve hearing such buildings are apt to be given an

always greater width—the gallery in the Sunday School room is used. A number of examples have been designed which account for a combination including only the main floor level and the gallery is retained at its usual height. In such cases, of course, the pulpit does not control both rooms, at least not as fully as might be desired, and the capacity is not as great. To remedy the defect of the ugliness of the dividing gallery is retained at its usual position above the main platform and the connection between the rooms is nothing more than an extremely liberal circulation area, for neither platforms controls both rooms, and this then is not properly one of the modes of combining the two, as outlined above.

The second mode of juxtaposition of the two rooms in question is along parallel axes, so that the platforms of both lie



Main Floor Plan.



Gallery Level Plan.

FIG. 7. CENTRAL CHRISTIAN CHURCH, HUNTINGTON, IND.
George W. Kramer, Architect.

wall, this is shortened as much as possible by making the Sunday School semicircular or of even greater area, as we shall see presently in a separate discussion of the planning of this room.

There is also to be considered the alternative of placing the two rooms on the same axis but in such fashion that the two platforms are disposed back to back. Fig. 13.) In such arrangements, the choir at corresponding ends. The dividing wall is then made collapsible in the same manner as before and the two halls thrown together in similar fashion, but with the difficulty that not all of the Sunday School space can be made available for combination purposes, since part would lie beyond the sector of vision which has its center in the pulpit. In such a plan the Sunday School platform is

stationary and in general the purpose of the school is better served, since the degree of possible isolation is greater.

An effort has been made to facilitate the solution along these lines by the so-

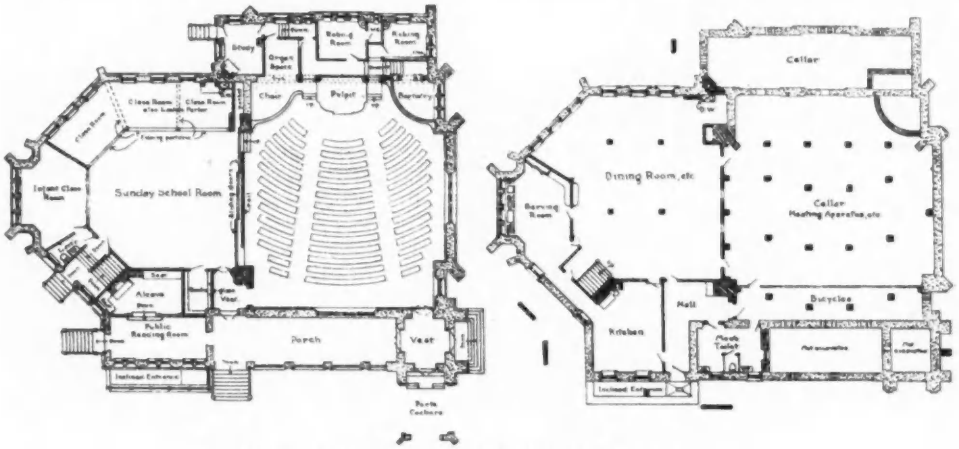


FIG. 8. CENTRAL BAPTIST CHURCH, WAYNE, PA.
D. K. Boyd & L. V. Boyd, Associated Architects.

called "corner pulpit plan" (Figs. 6, 7), which was at one time much favored but has been to a certain extent superseded. This combines some of the elements of each of the two plan types preceding. The pulpit of the auditorium and the superintendent's platform in the Sunday School room are placed in adjoining corners of the respective halls, so that when the dividing wall is removed as before the two platforms practically become one and a single center of control is again established. To be sure, the platform is necessarily then a broad one, for the rooms when thrown together form a broad and shallow space, improving the audibility of the speaker, but rendering it more difficult for him to see all parts of his audience when both rooms are filled, because of the large angle of vision which he is obliged to address. He has, of course, the inconvenient alternative of moving from side to side of his platform. To remove this difficulty various further suggestions have been adopted: the platforms have been set far back, so as to command practically every square foot of the two adjoining rooms and at the same time to reduce the actual size of the combined platform to the minimum of requirements. This introduces the difficulty of hampering the free working of the official side of the service and in the case of denominations requiring platform baptisteries or similar features it would be practically impossible to obtain the maximum of benefit from this type of combina-

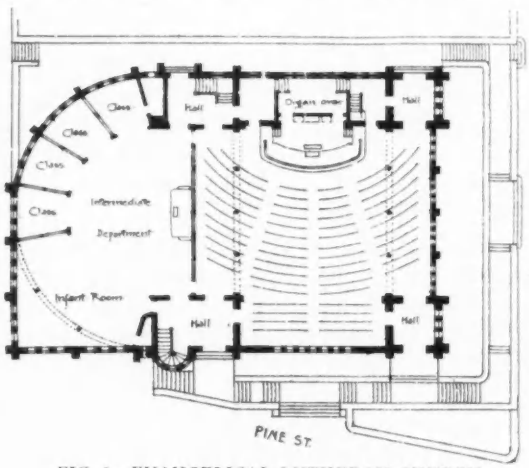
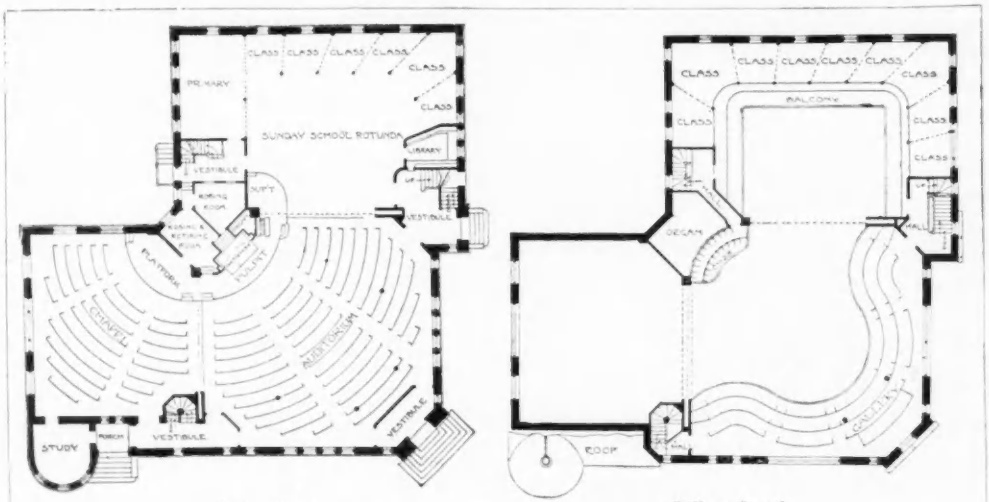


FIG. 9. EVANGELICAL LUTHERAN CHURCH, STEELTON, PA.
J. A. Dempwolf, Architect.



Main Floor Gallery Level

FIG. 10. SUGGESTED FLOOR PLAN.
George W. Kramer, Architect.

tion. By this method, however, a greater space becomes available for the actual business of the Sunday School, a factor that deserves consideration.

Various other arrangements have been attempted to improve upon the parallel juxtaposition and corner pulpit plans. Notable among these is that of placing the two rooms upon axes at right angles to one another (Figs. 8, 9), so that the platform of the Sunday School again is placed against the movable wall and would itself need to be collapsible or movable. This arrangement offers the same advantage obtained in the corner pulpit plan just outlined. The purpose is to gain

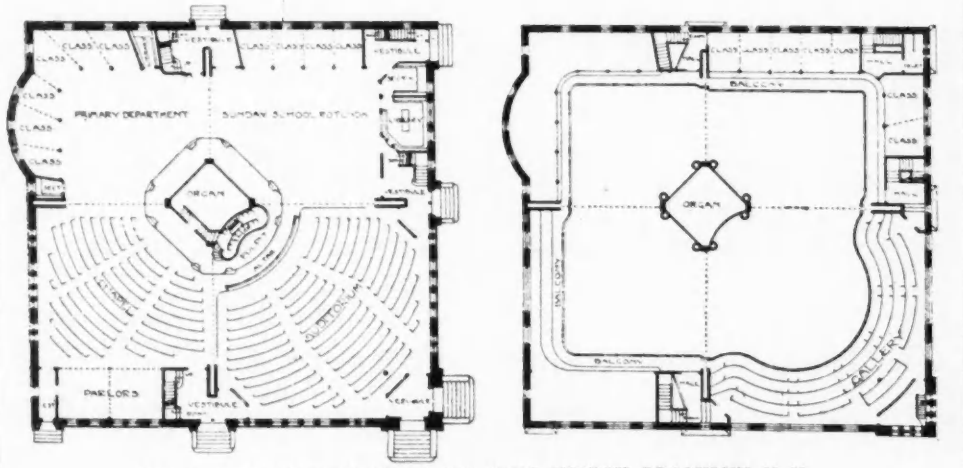


FIG. 11. BUSHWICK AVENUE METHODIST CHURCH, BROOKLYN, N. Y.
George W. Kramer, Architect.

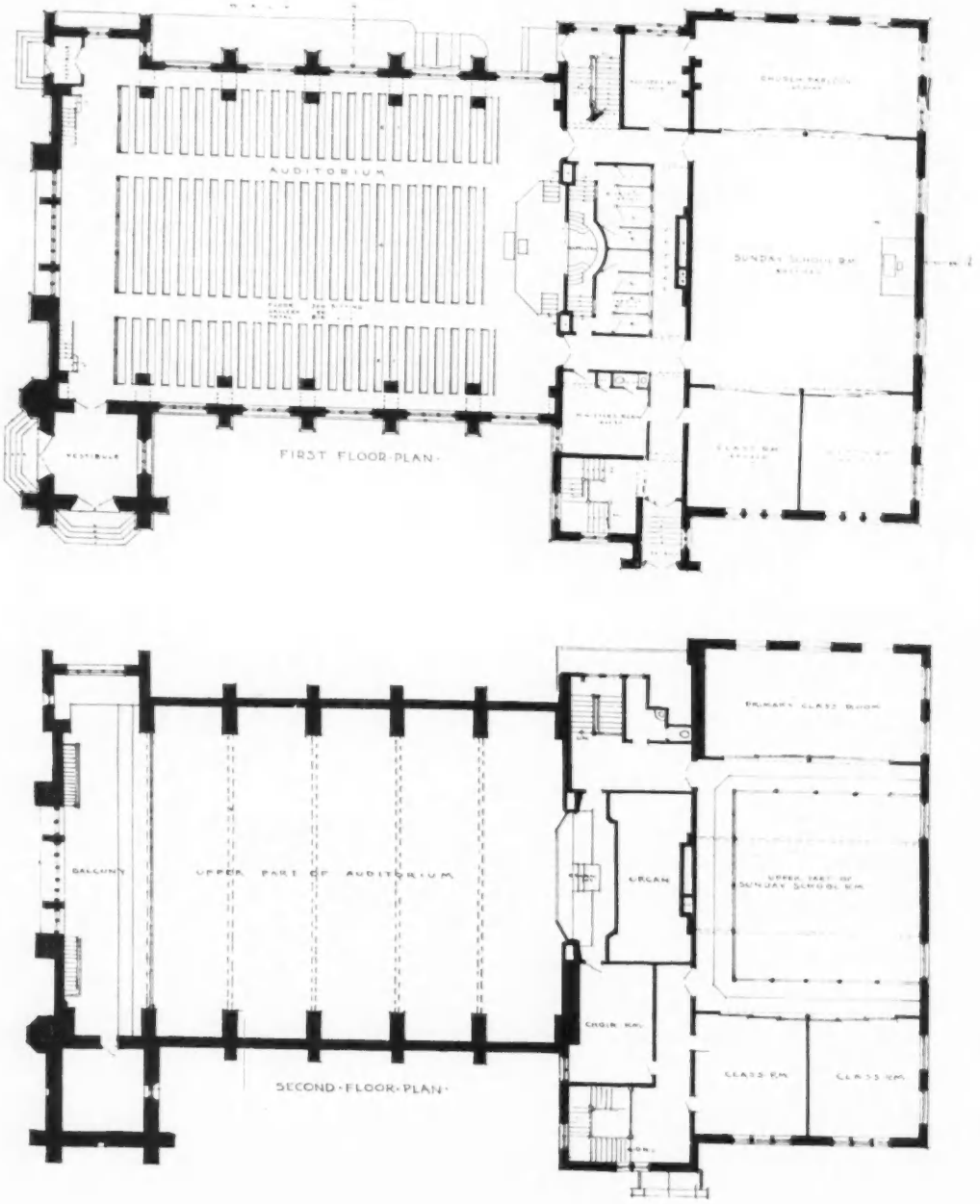


FIG. 12. BAPTIST CHURCH, BROOKLINE, MASS. J. A. SCHWEINFURTH, ARCHITECT.

more actual Sunday School space, more floor and gallery area for subdivision into classrooms. By this and the preceding schemes the school has the complete space bordered by three of its walls, or the equivalent if it be not of rectangular plan, with the difference that a small area in one corner is required in the former for the platform. This will be considered in greater detail in connection with our discussion of the interior arrangement of the Sunday School proper.

The idea of the corner pulpit has also been amplified to include three (Fig. 10) or even all four (Fig. 11) of the quadrants of what may be called the plan circle. So that the matter of a single control, by one individual, for all three or all four parts must be neglected, and it becomes a question simply of increased area. This, in a very large congregation and school, achieves a momentous importance, for it makes possible an arrangement involving one, two, three or four of its parts, or any desired combination of these, as may be required by the particular type of service or festivity contemplated. In these plans the main platforms and its organ would be retained in all cases as the central point and concerts for immense numbers could be given, even though the organist would not be visible to all. To make the organ available from one or other of the rooms, whether there are two or three or four tributary to the same general plan, an additional set of manuals may be provided in any part desired, or in all parts, so that the organist may take his place in the particular room momentarily in use.

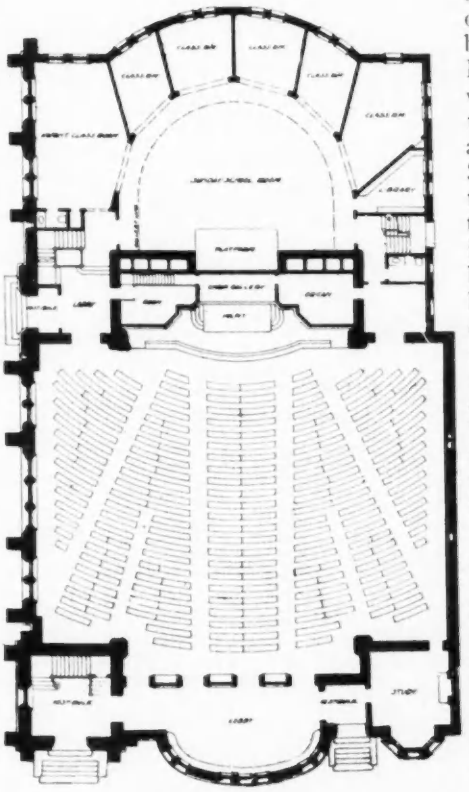


FIG. 13. ST. JAMES M. E. CHURCH, CHICAGO, ILL.
Charles S. Frost, Architect.

Single Level—Semi-detached Plan.

It has not always been considered necessary or advisable to build so that audience hall and Sunday School space might be thrown together, and there are numerous examples of plan arrangements similar to any thus far illustrated in all but the actual separation of the two masses by permanent walls. For purposes of convenience, and to obtain completeness and isolation for the Sunday School, not to mention the better opportunities for interior design in both halls, the two have been kept close enough together to form or to approximate a unit in the exterior, but have been conceived as distinct plan features with regard to their respective functions. No doubt the frequent secular use of the Sunday School room must be considered a factor in the wilful isolation of the church proper, which but slowly accords itself with the energetic and business-like atmosphere of an active modern Sunday School. In such arrangements an integral connection between the two rooms is frequently retained and generous circulation facilities are provided when the rooms are on a single continuous axis (Figs. 12, 13, 19) or on parallel axes; the same may likewise be said when they are arranged on axes at right angles. (Figs. 14, 16). As many other examples, however, show a

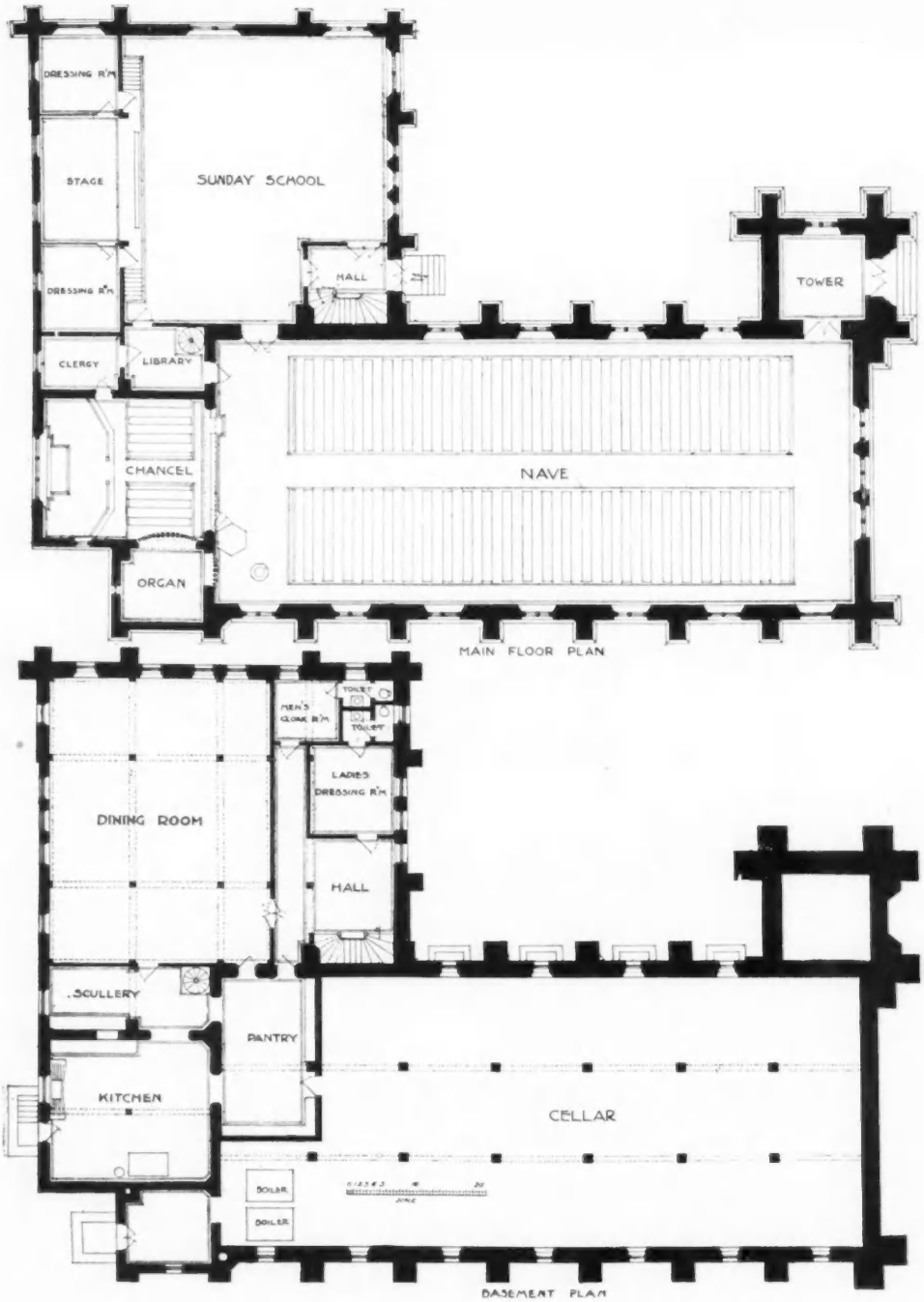


FIG. 14. UNIVERSALIST CHURCH, WATERTOWN, N. Y. HOBART B. UPJOHN, ARCHITECT.

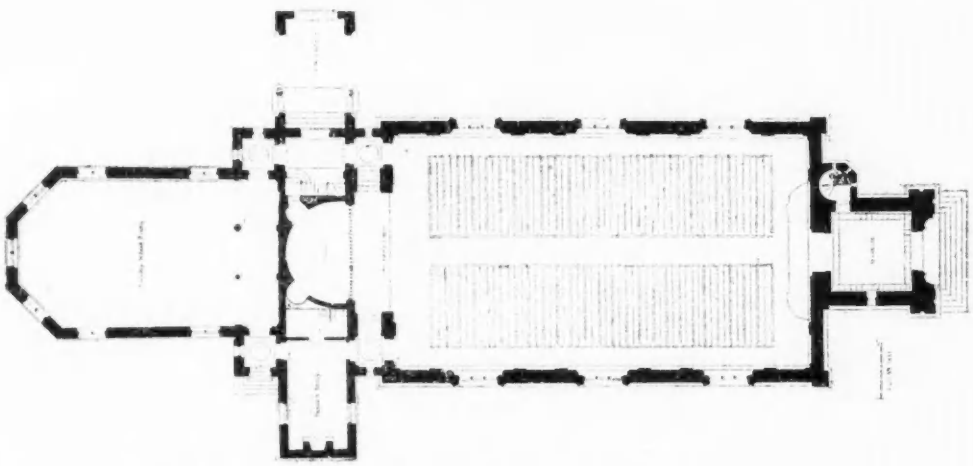


FIG. 15. SHEPARD MEMORIAL CHURCH, SCARBOROUGH HEIGHTS, N. Y.
Haydel & Shepard, Architects.

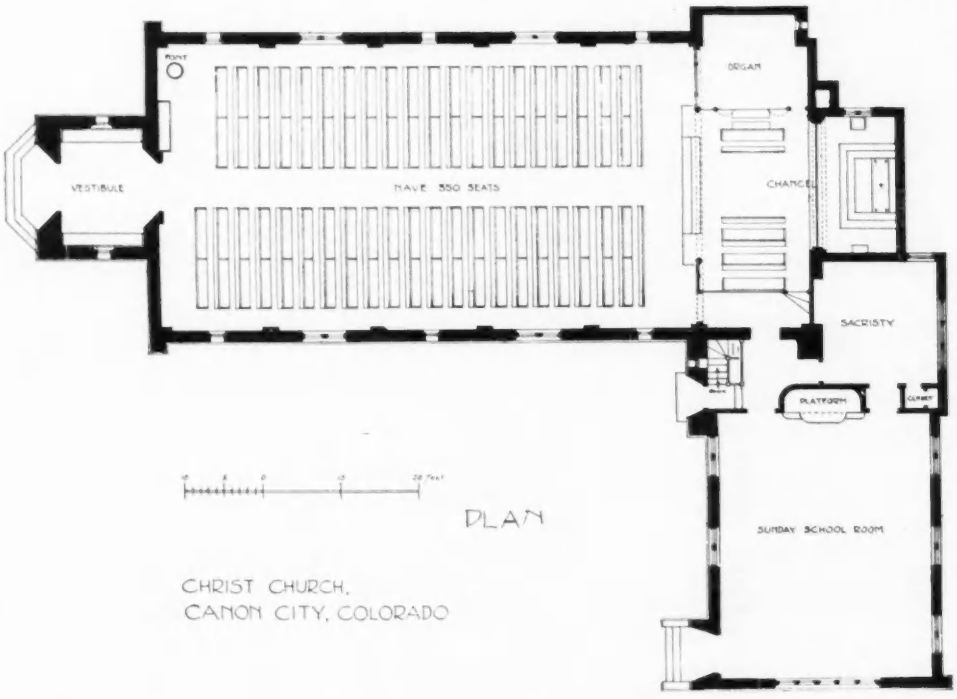


FIG. 16. CHRIST CHURCH, CANON CITY, COLO.
T. MacLaren, Architect.

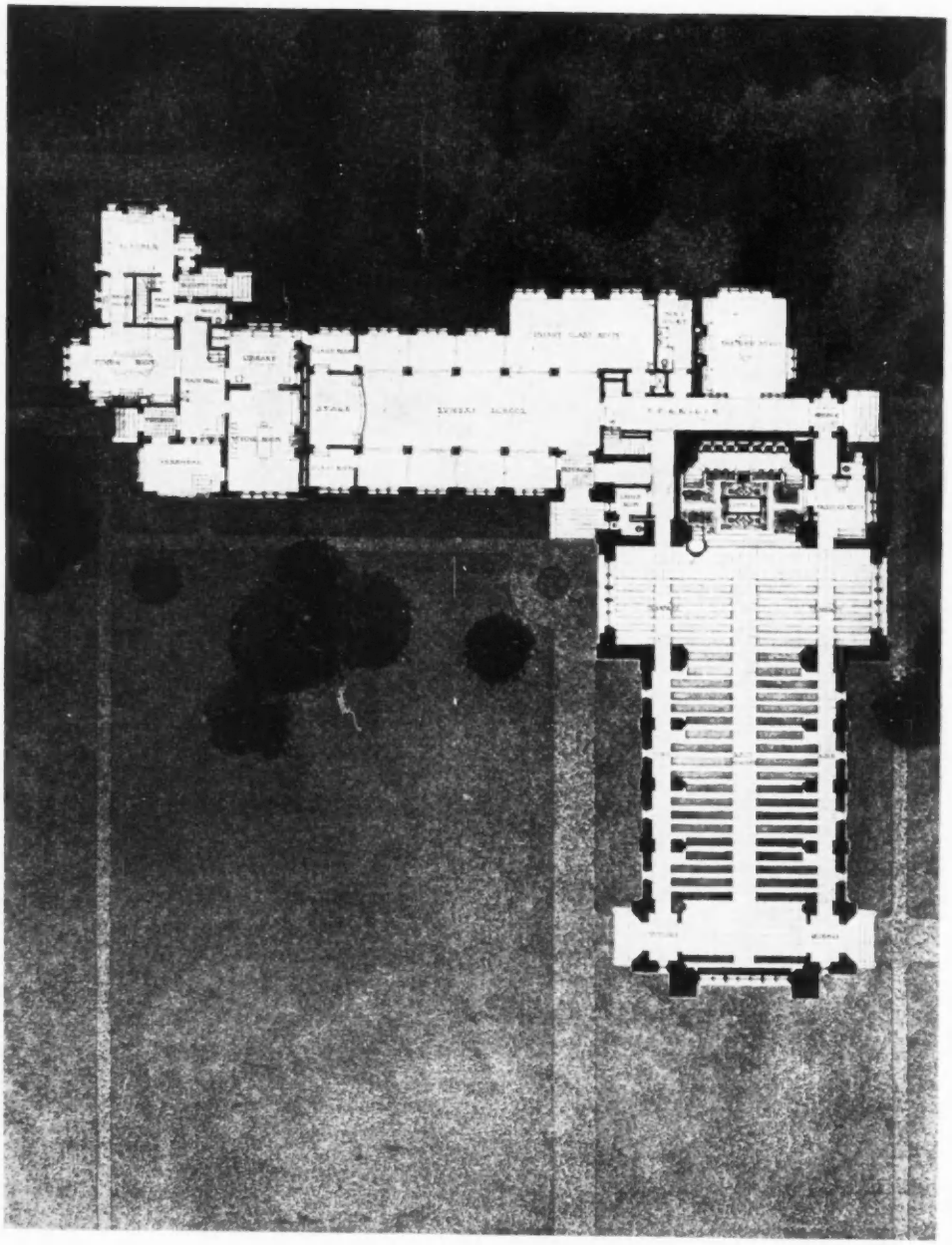


FIG. 17. RUSSELL SAGE MEMORIAL, FAR ROCKAWAY, N. Y. CRAM, GOODHUE & FERGUSON, ARCHITECTS.

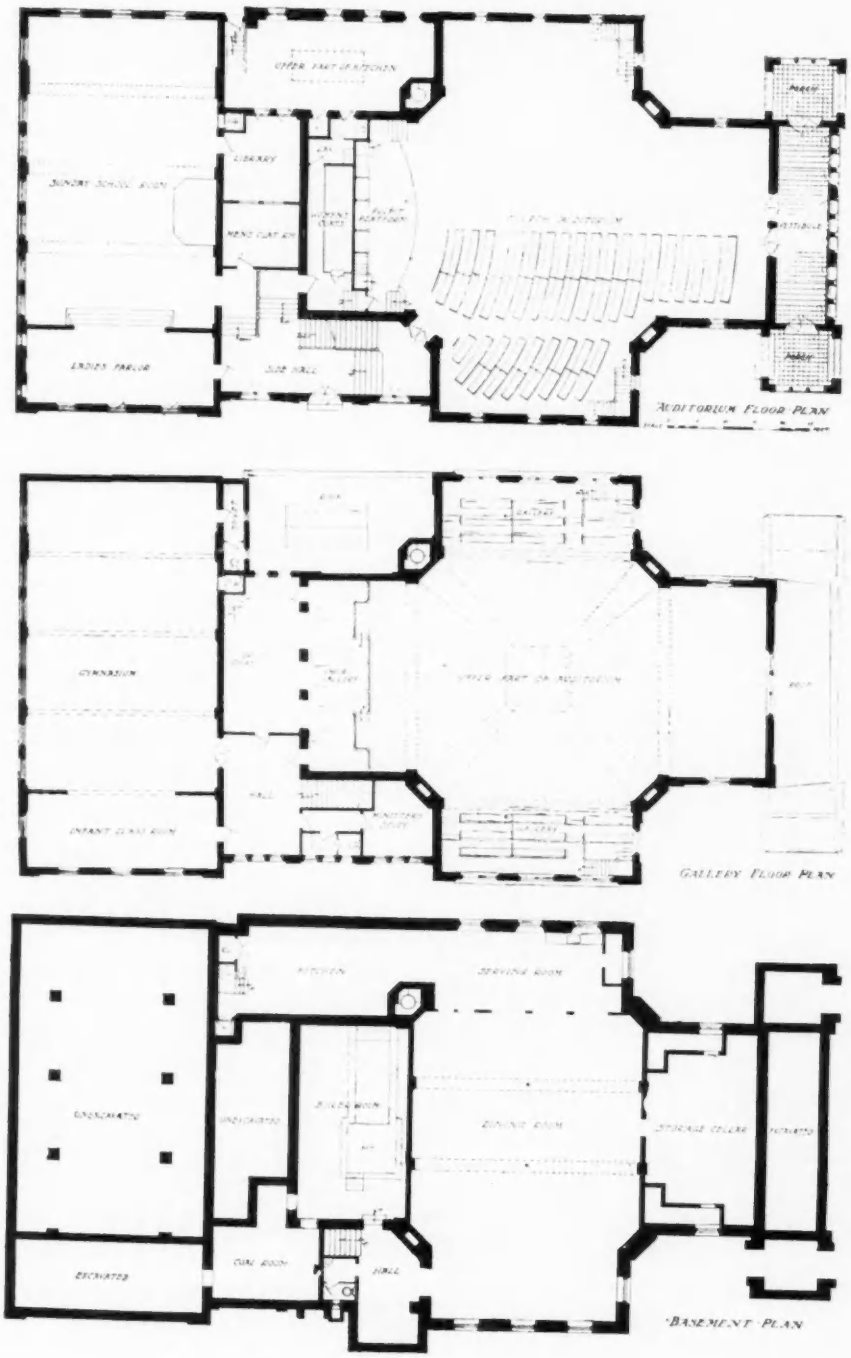


FIG. 18. FIRST UNIVERSALIST CHURCH, ROCHESTER, N. Y. CLAUDE BRAGDON, ARCHITECT.

complete severance of the two divisions and the connecting passages are unimportant, or, at any rate, indirect. (Figs. 15, 17.) A few examples show no provision for public circulation between the two and the only access to either is by separate

Finally, still retaining a single level for both halls and granted that sufficient land area is available, we note the plan based upon an entire separation of the two so that there remains a simple hallway or narrow passage or perhaps even a cloistered walk to bind them together. (Figs. 21, 23.)

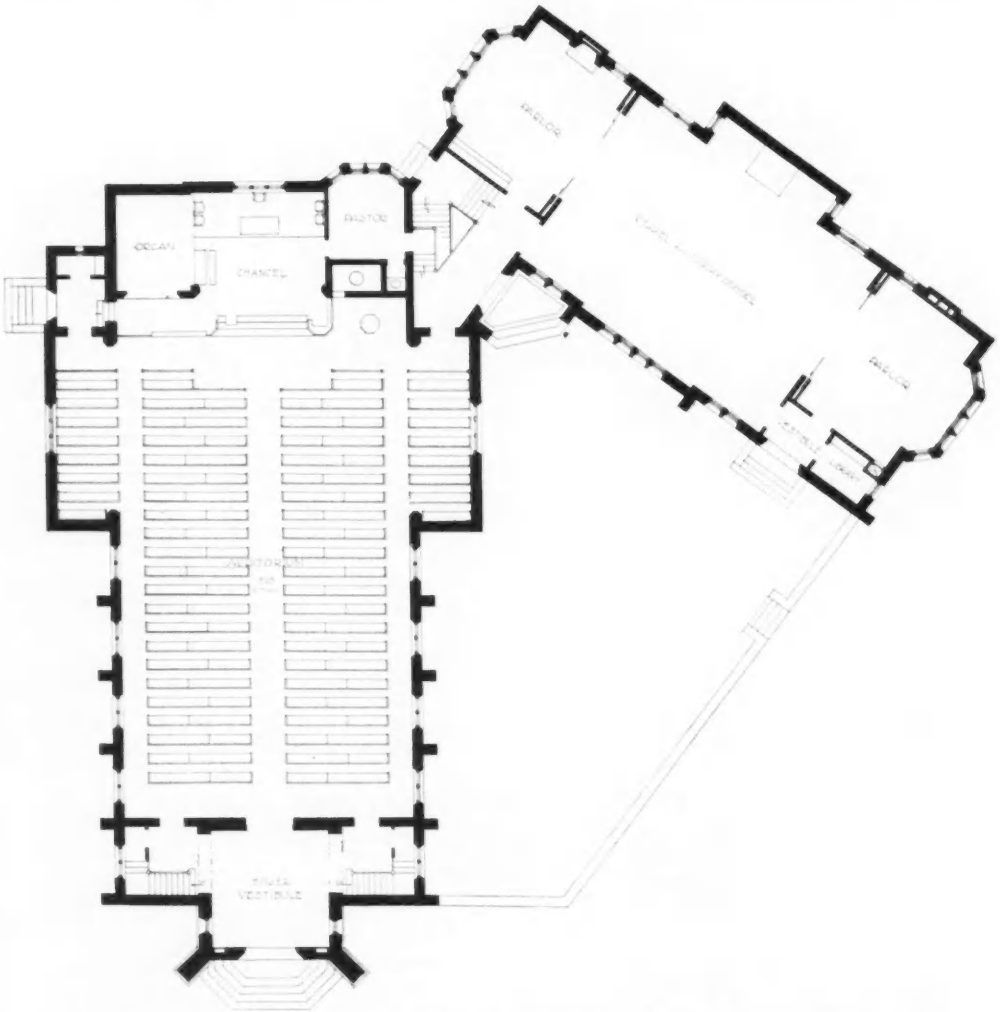


FIG. 19. NEWTON HIGHLANDS CONGREGATIONAL CHURCH, NEWTON HIGHLANDS, MASS.
George F. Newton, Architect.

entrances connected by an exterior path. (Figs. 18, 20, 22.) In all such cases, however the exigencies of terrain and land values must be given due weight among the factors that shape the plan in the course of its initial preparation and execution.

At this point the Sunday School room assumes the guise of a distinct building. It may be individually designed; its use is not in any organic sense contingent upon the character or use of the audience

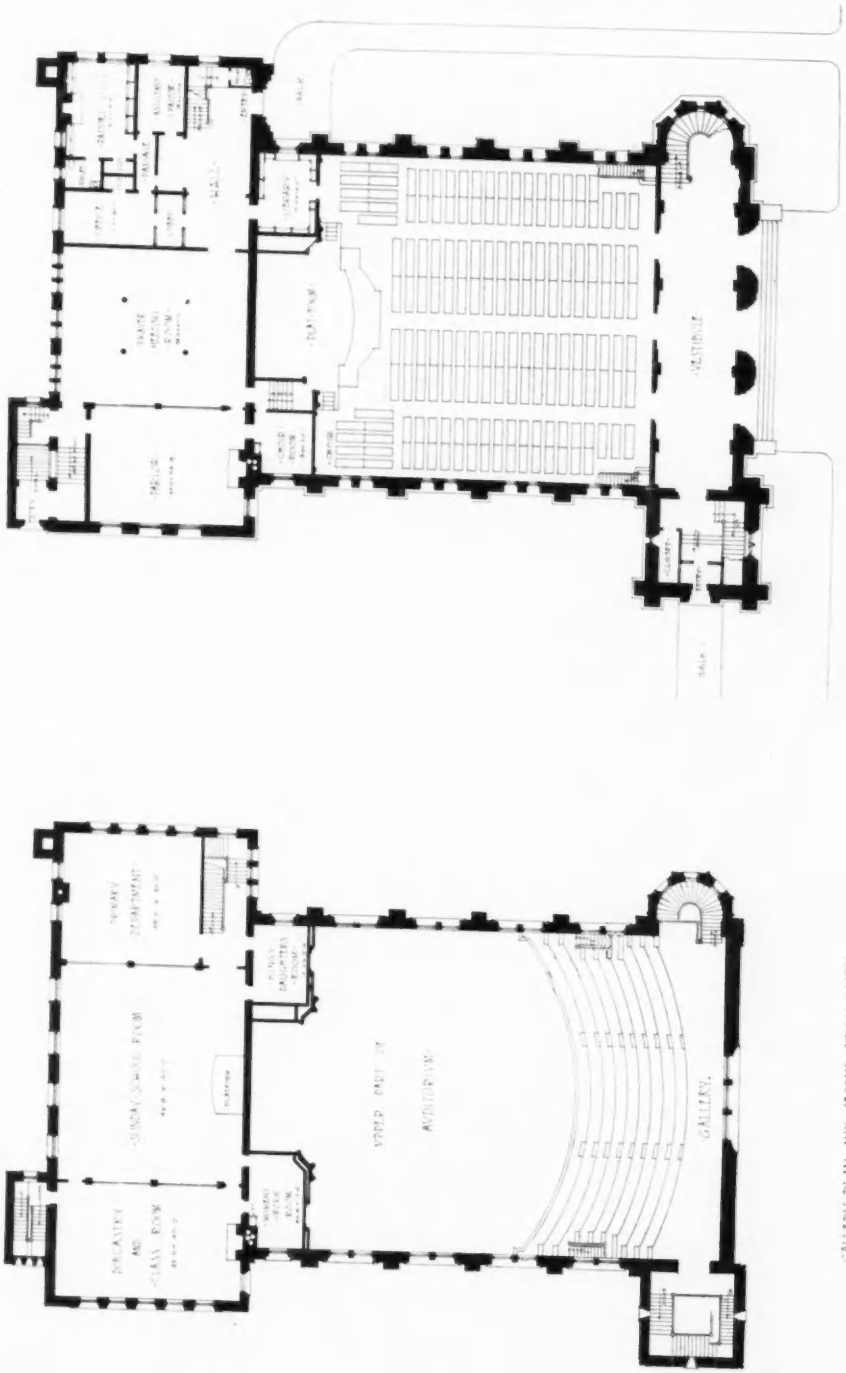


FIG. 20. PILGRIM CONGREGATIONAL CHURCH, ST. LOUIS, MO.
Mauran, Russell & Garden, Architects.

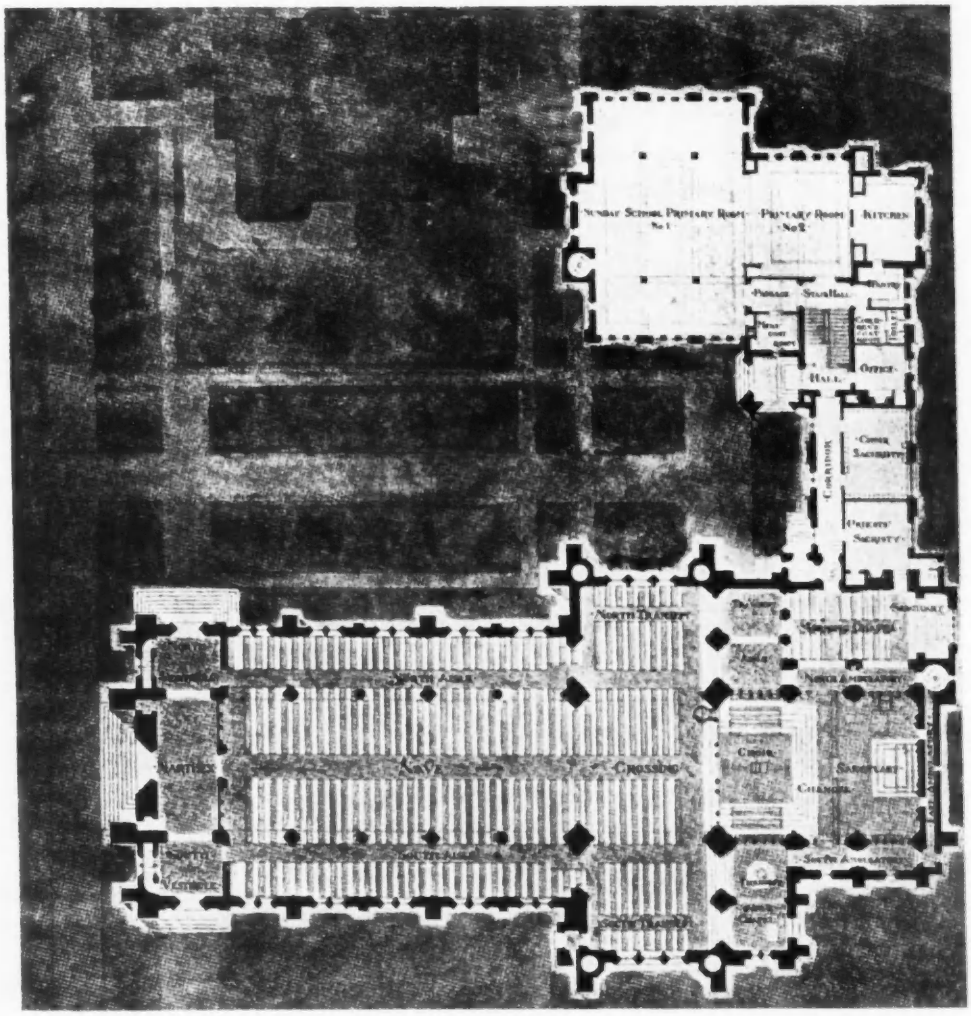
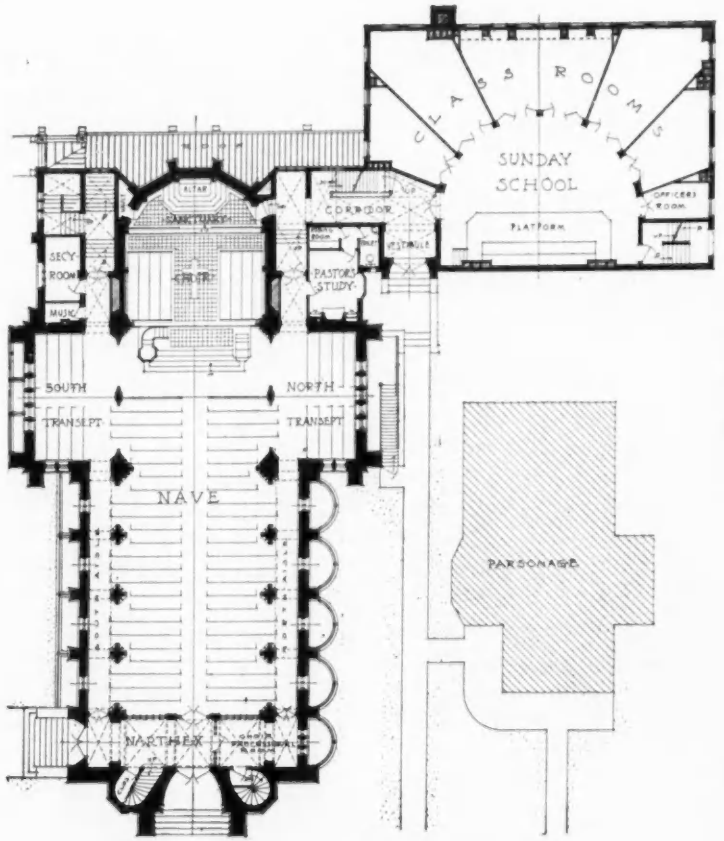
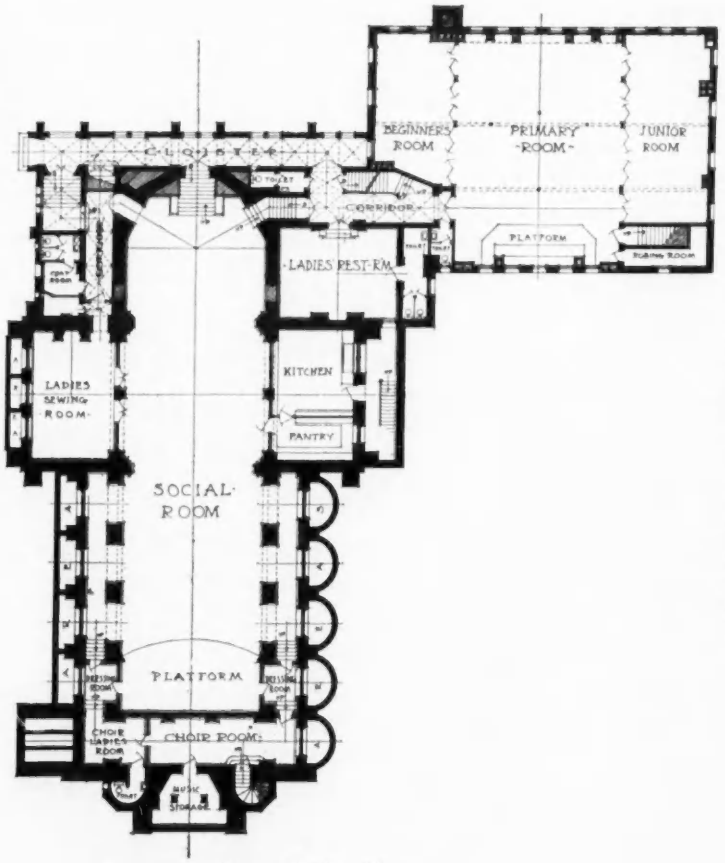


FIG. 21. CALVARY CHURCH, PITTSBURGH, PA.
CRAM, GOODHUE & FERGUSON, ARCHITECTS.



Ground Floor Plan.



Basement Floor Plan.

FIG. 22. TRINITY LUTHERAN CHURCH, AKRON, OHIO. J. W. C. CORBUSIER, ARCHITECT.

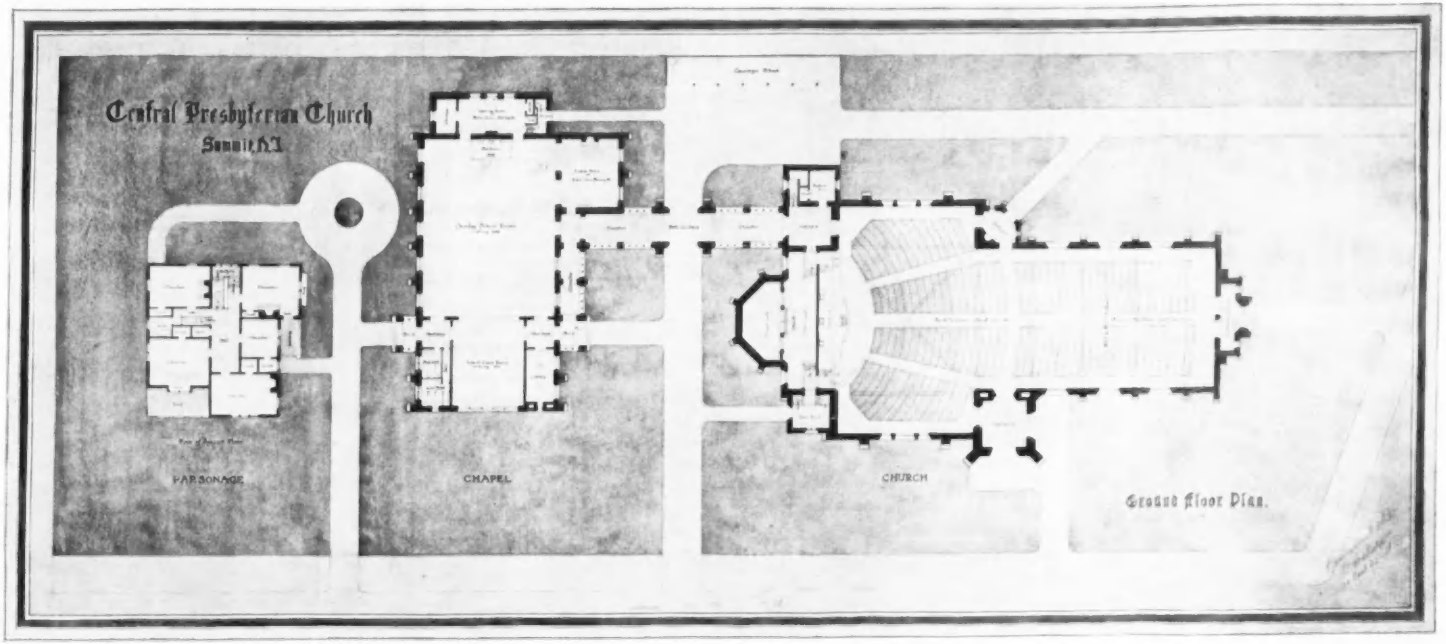


FIG. 23. CENTRAL PRESBYTERIAN CHURCH, SUMMIT, N. J. BENJAMIN V. WHITE, ARCHITECT.

hall, from which it gains nothing and upon which it no longer intrudes. In short, it becomes an individual problem, aiming at an unhampered solution of original requirements. Only such buildings may be said adequately to serve the true purposes of the Sunday School in their fullest compass, because those purposes are the determining factors in its plan. While the purely devotional atmosphere of the audience hall is largely dispensed with, the business of teaching religion is seriously undertaken. What is more, the large number of other types of service and succor and teaching of more or less secular character may then be gathered under a single roof and properly administered. The separate building, furthermore, is apt to be of more than one story, thus increasing its own scope of utility, and at the same time releasing any space which it might otherwise occupy in the church edifice itself for other purposes. Illustrations of this aspect of the Sunday School problem will be given in connection with our discussion of the types of church plans which are calculated to respond especially to the more complex needs of broader community service.

(To be continued.)

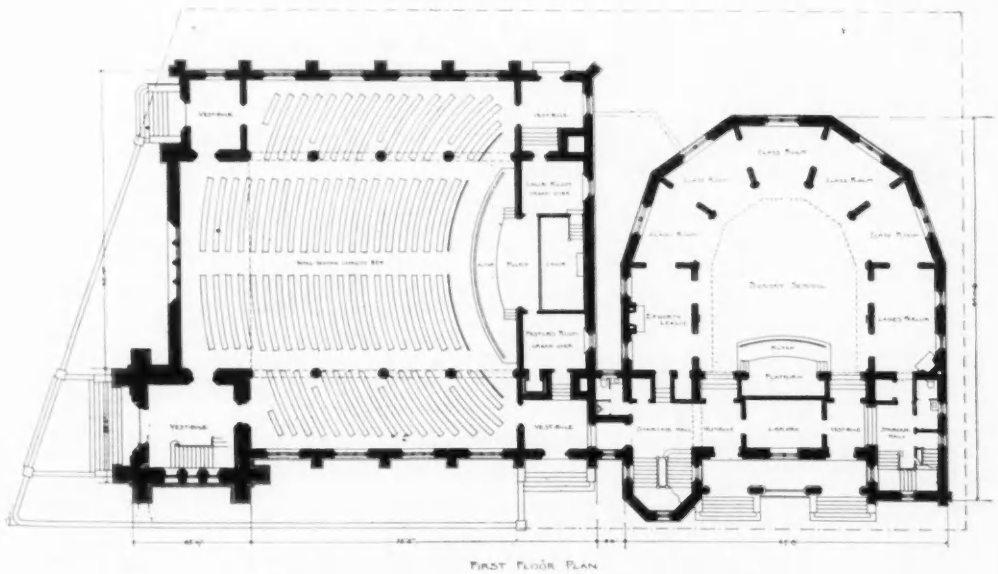
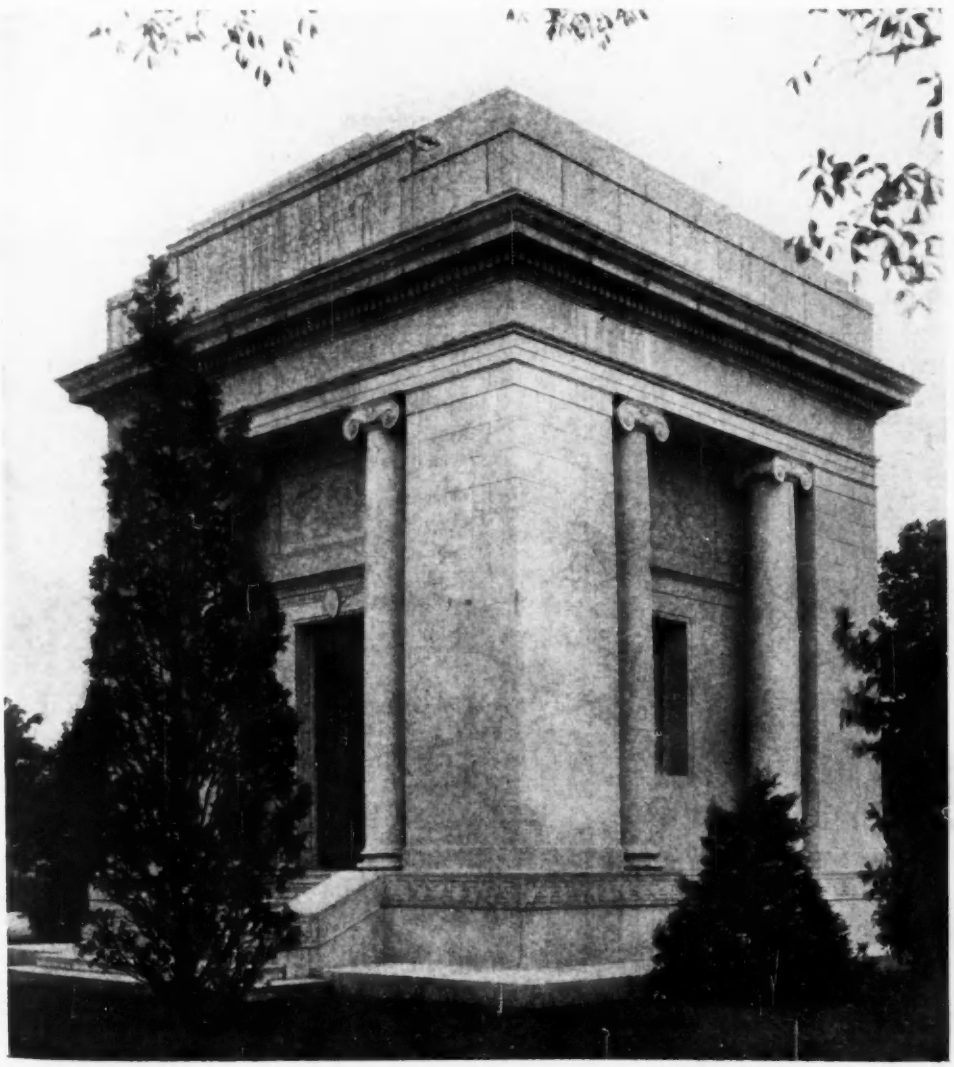


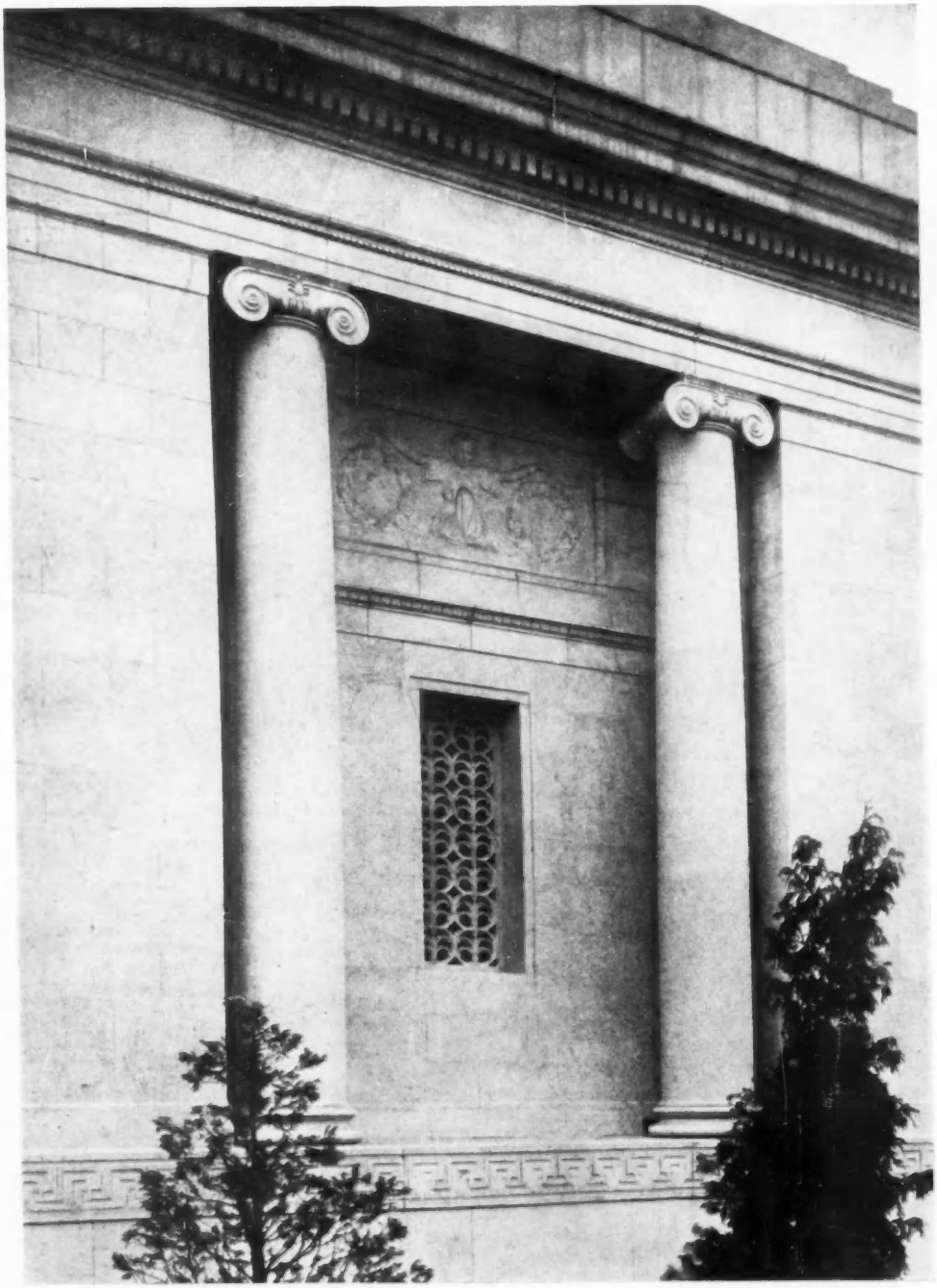
FIG. 24. FIRST M. E. CHURCH, GERMANTOWN, PA.
Rankin & Kellogg, Architects.

ENTRANCE—THE MILBANK MEMORIAL, WOODLAWN CEMETERY, NEW YORK. YORK & SAWYER, ARCHITECTS.

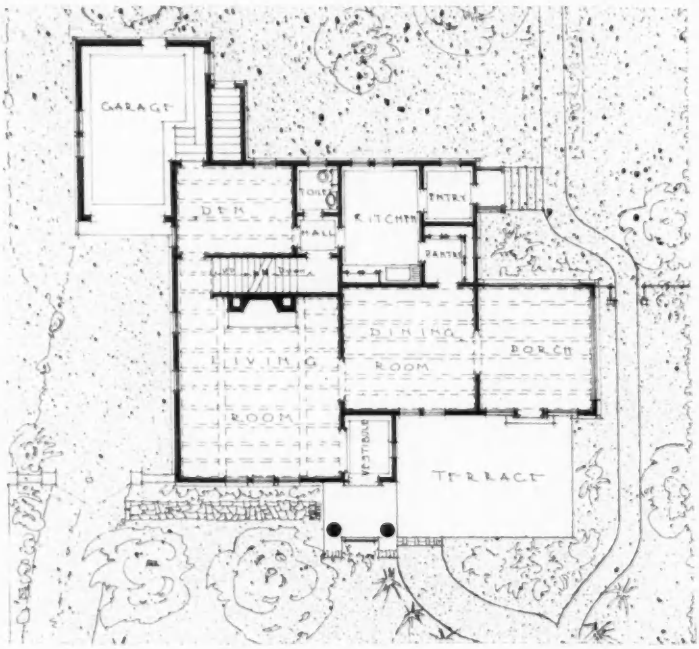
PORTFOLIO OF CVRRENT ARCHITECTVRE



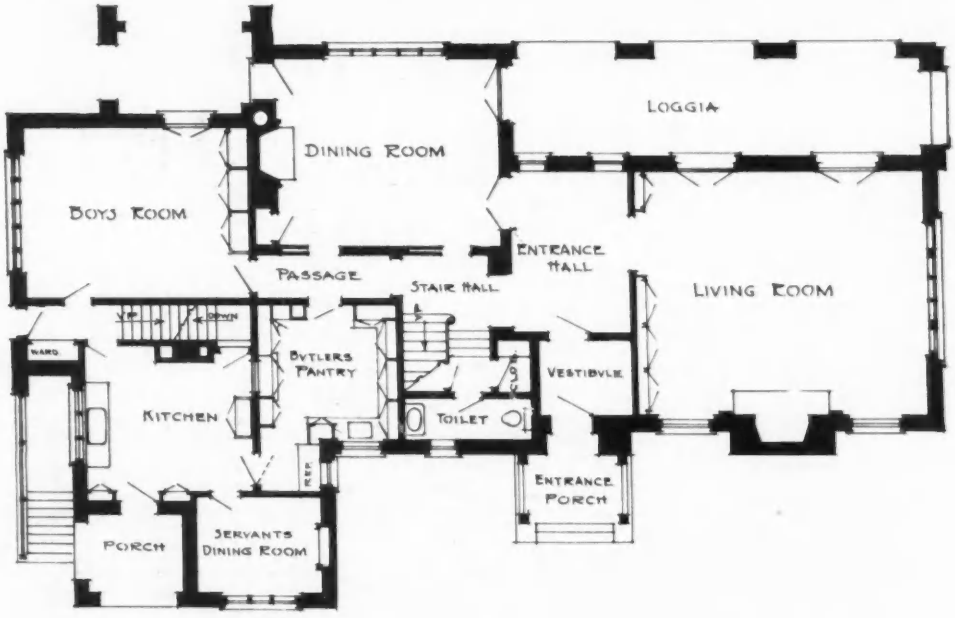
THE MILBANK MEMORIAL, WOODLAWN CEMETERY, NEW YORK. YORK & SAWYER, ARCHITECTS.



DETAIL OF SIDE ELEVATION—THE MILBANK MEMORIAL, WOODLAWN CEMETERY, NEW YORK. YORK & SAWYER, ARCHITECTS.

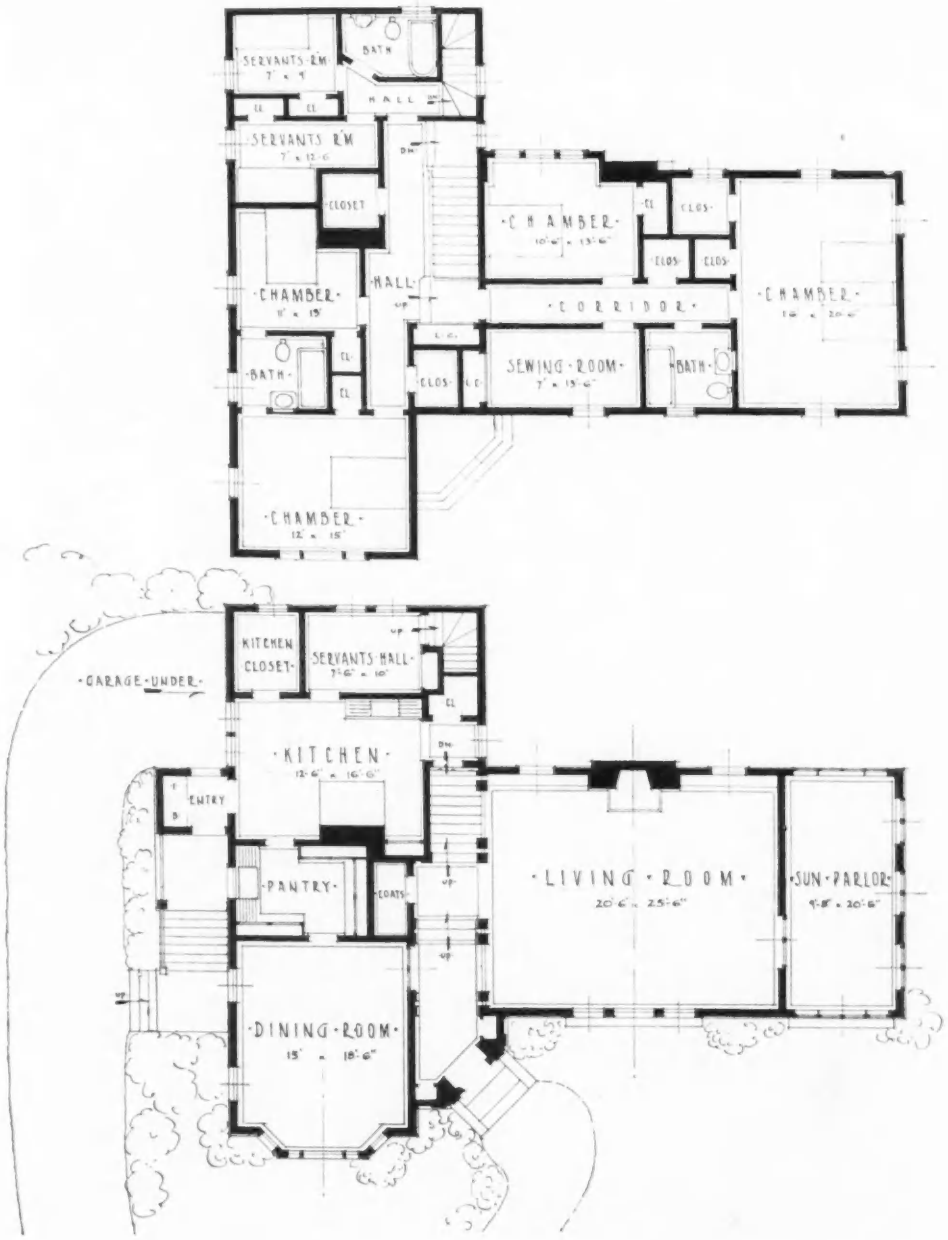


VIEW AND FIRST FLOOR PLAN—OWN HOUSE AT DES MOINES, IOWA. FRANK B. WETHERELL, ARCHITECT.



REAR VIEW AND FIRST FLOOR PLAN—HOUSE OF WILBUR L. LAFEAN, ESQ., HIGHLAND PARK, ILL. FREDERICK W. PERKINS, ARCHITECT.

HOUSE OF WILBUR L. LAFEAN, ESQ., HIGHLAND PARK, ILL. FREDERICK W. PERKINS, ARCHITECT.



FIRST AND SECOND FLOOR PLANS—HOUSE OF FRED LAVIS, ESQ., HARTSDALE, N. Y. PARKER THOMAS HOOPER AND FRANK C. FARLEY, ASSOCIATED ARCHITECTS.

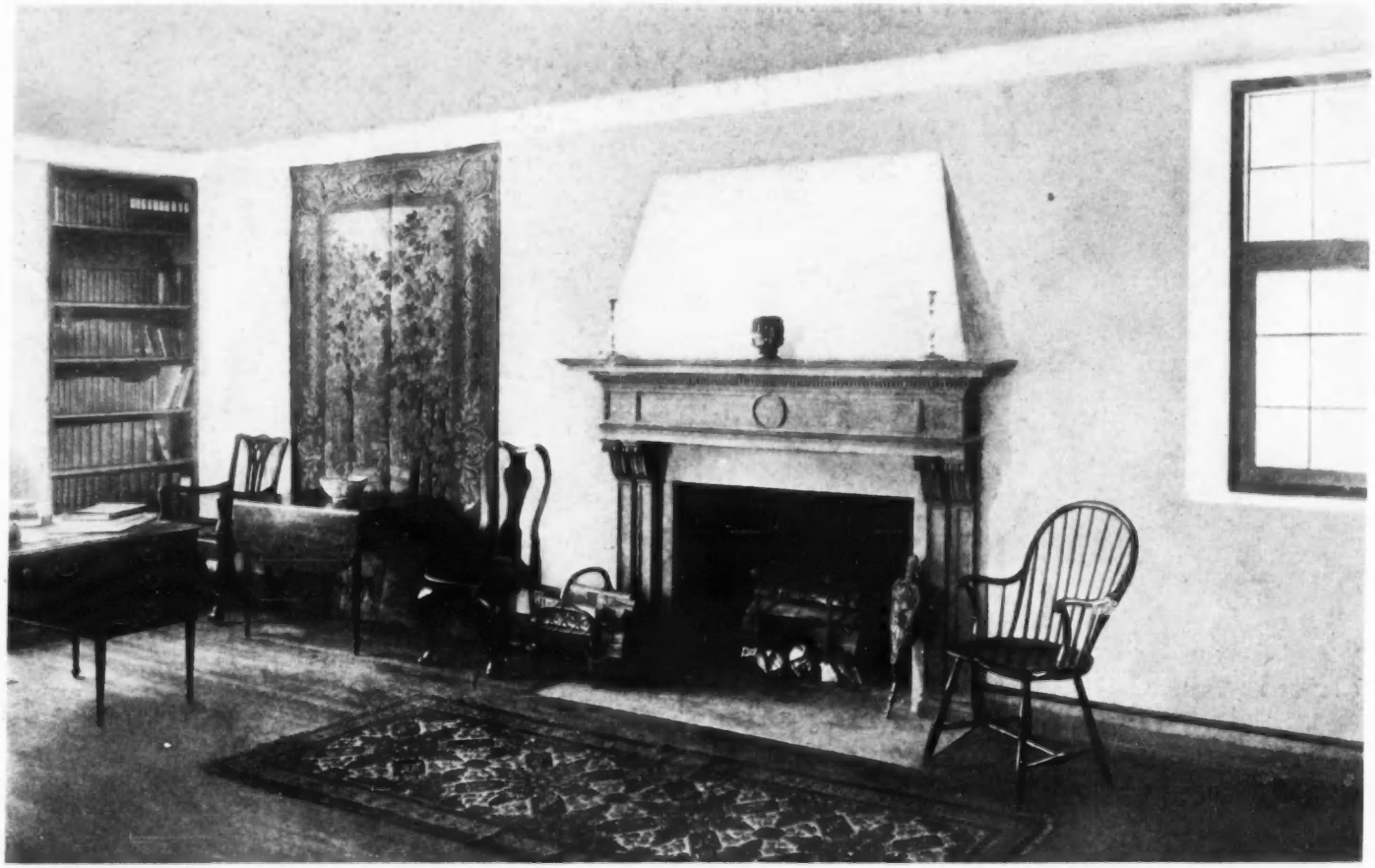
HOUSE OF FRED LAVIS, ESQ., HARTSDALE, N. Y. PARKER THOMAS HOOPER AND FRANK C. FARLEY, ASSOCIATED ARCHITECTS.

STAIR—AWBURY, GERMANTOWN, PHILADELPHIA. EDMUND B. GILCHRIST, ARCHITECT.

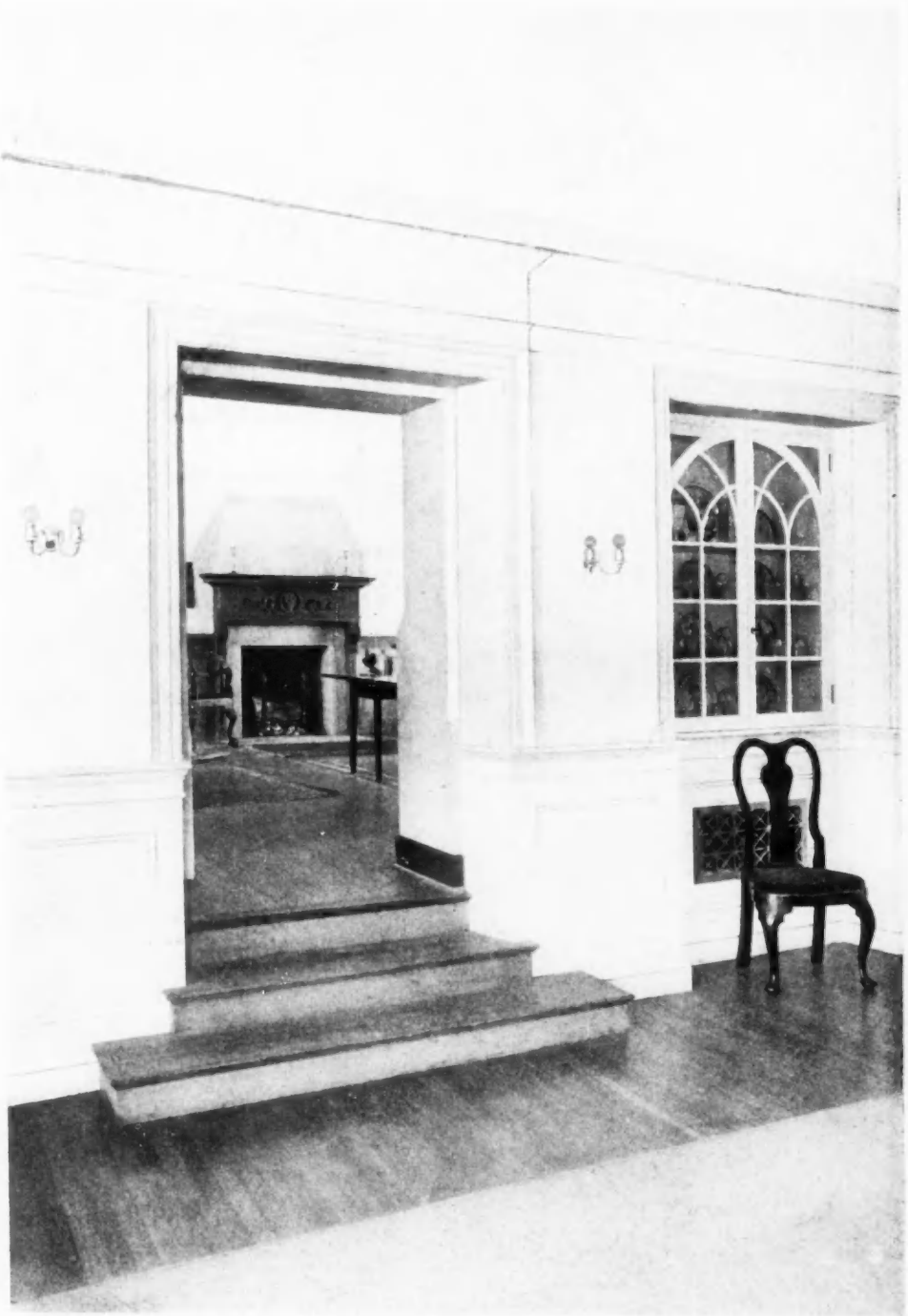
EAST FRONT—AWBURY, GERMANTOWN, PHILADELPHIA. EDMUND B. GILCHRIST, ARCHITECT.

LIVING ROOM—AWBURY, GERMANTOWN, PHILADELPHIA. EDMUND B. GILCHRIST, ARCHITECT.

LIVING ROOM—AWBURY, GERMANTOWN, PHILADELPHIA. EDMUND B. GILCHRIST, ARCHITECT.



LIBRARY—AWBURY, GERMANTOWN, PHILADELPHIA. EDMUND B. GILCHRIST, ARCHITECT.



DINING ROOM DOOR—AWBURY, GERMANTOWN, PHILADELPHIA. EDMUND B. GILCHRIST, ARCHITECT.

STUDIO IN COUNTRY RESIDENCE OF RICHARD HOWLAND HUNT, OF HUNT & HUNT, ARCHITECTS.

STUDIO IN COUNTRY RESIDENCE OF RICHARD HOWLAND HUNT, OF HUNT & HUNT, ARCHITECTS.

OLD ITALIAN MANTEL IN STUDIO—COUNTRY RESIDENCE OF
RICHARD HOWLAND HUNT, OF HUNT & HUNT, ARCHITECTS.

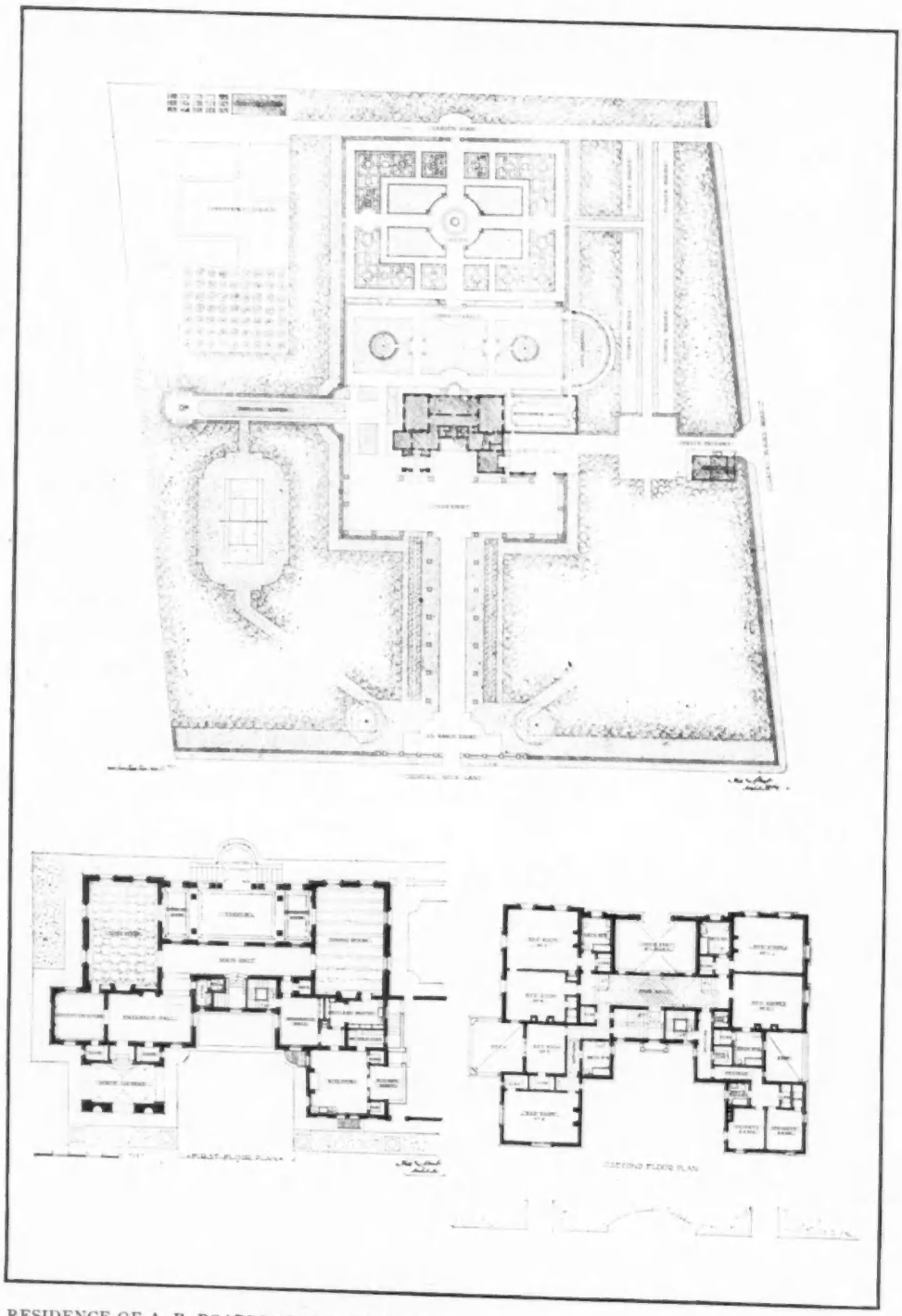
RECEPTION ROOM—CITY RESIDENCE (NEW YORK) OF JOSEPH H. HUNT, OF HUNT & HUNT, ARCHITECTS.

DINING ROOM—CITY RESIDENCE OF JOSEPH H. HUNT, OF HUNT & HUNT, ARCHITECTS.

DINING ROOM—CITY RESIDENCE OF JOSEPH H. HUNT, OF HUNT & HUNT, ARCHITECTS.

LOUIS XVI ROOM—CITY RESIDENCE OF JOSEPH H. HUNT, OF HUNT & HUNT, ARCHITECTS.

BEDROOM—CITY RESIDENCE OF JOSEPH H. HUNT, OF HUNT & HUNT, ARCHITECTS.

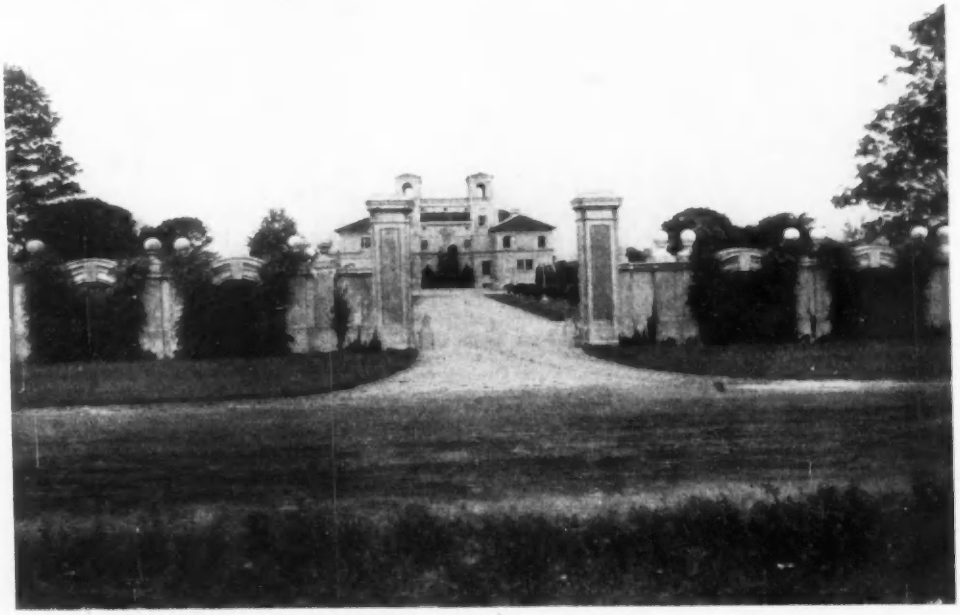


RESIDENCE OF A. B. BOARDMAN, ESQ., SOUTHAMPTON, L. I. HILL & STOUT, ARCHITECTS.

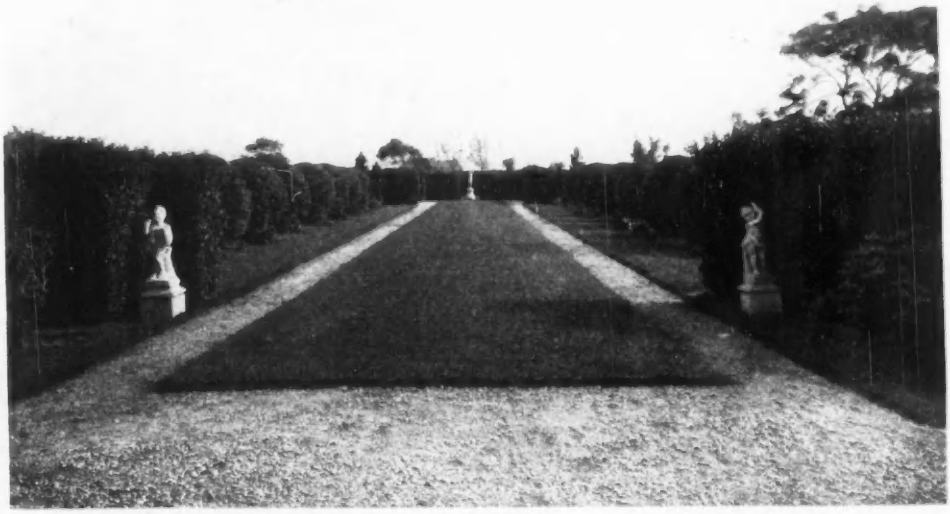
RESIDENCE OF A. B. BOARDMAN, ESQ., SOUTHAMPTON, L. I. HILL & STOUT, ARCHITECTS.

LOGGIA—RESIDENCE OF A. B. BOARDMAN, ESQ.,
SOUTHAMPTON, L. I. HILL & STOUT, ARCHITECTS.

PORTE-COCHÈRE—RESIDENCE OF A. B. BOARDMAN, ESQ.,
SOUTHAMPTON, L. I. HILL & STOUT, ARCHITECTS.



ENTRANCE GATE—RESIDENCE OF A. B. BOARDMAN, ESQ., SOUTHAMPTON, L. I.
Hill & Stout, Architects.



FORMAL GARDEN—RESIDENCE OF A. B. BOARDMAN, ESQ., SOUTHAMPTON, L. I.
Hill & Stout, Architects.

GENERAL VIEW FROM GARDEN—RESIDENCE OF A. B. BOARDMAN, ESQ., SOUTHAMPTON, L. I. HILL & STOUT, ARCHITECTS.

Photo by Vander Weyde.

GRANT'S TOMB, NEW YORK.

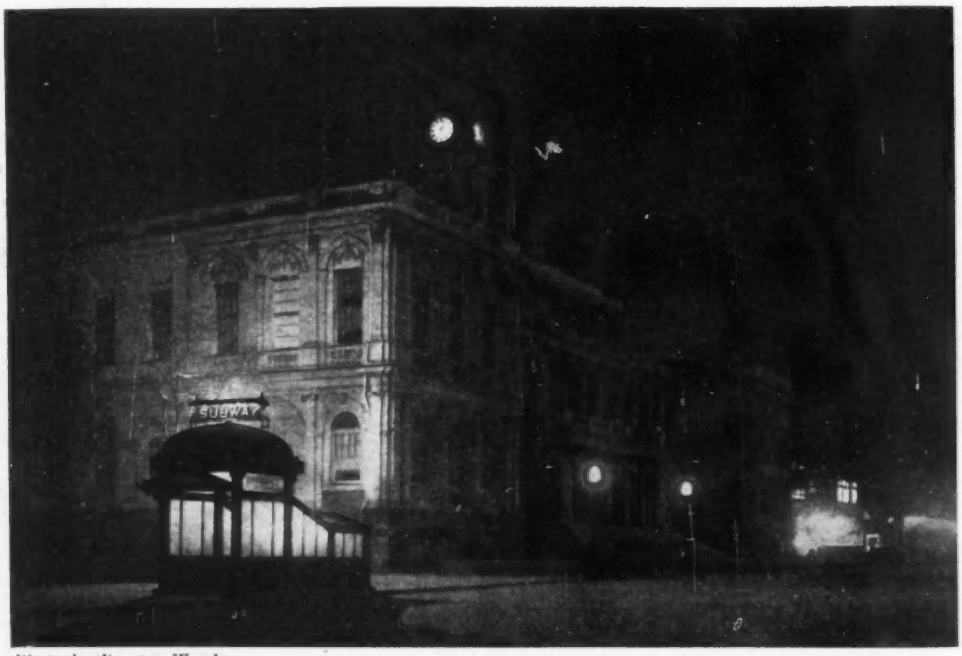


Photo by Vander Weyde.

THE NEW YORK CITY HALL AT MIDNIGHT.

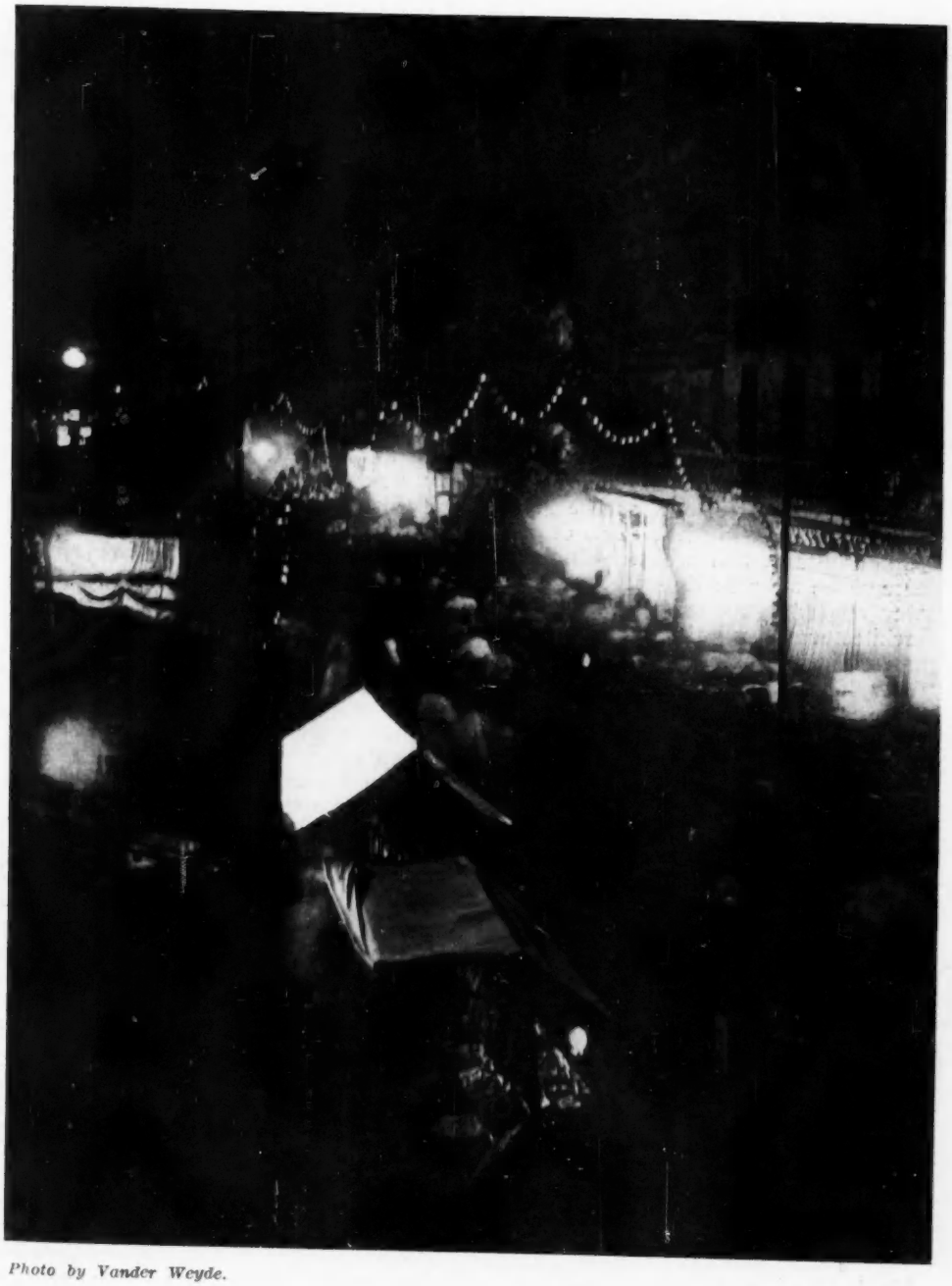


Photo by Vander Weyde.

NIGHT SCENE IN THE ITALIAN QUARTER, NEW YORK.

THE DEFINITION OF GOTHIC

By CHARLES H. MOORE

IN an article entitled "Gothic Architecture and Its Critics," published in The Architectural Record for May of the current year, Professor A. D. F. Hamlin briefly discusses some of the writings on this architecture that have appeared since the early part of the nineteenth century, and among the later of these writings he refers to my own in appreciative terms; but he accompanies his commendation with strictures which materially qualify it. He affirms that in my definition of Gothic I have failed to define the art, and he objects to my restriction of the term to the French art alone, on the ground that it is a term which "had its origin in popular usage, and which by universal acceptance in half a dozen languages has been applied to a vast body of mediaeval architecture;" and that it "connotes a movement covering all Western Europe through a period of over three and a half centuries." "One would suppose," he adds, "that the first effort of the scientific writer would be to seek for those elements, qualities, features and principles which were common to the whole movement, and which would account for the comprehensive use of the term."

Leaving for the moment the questions of definition and restriction, I may say it appears to me that popular usage and universal acceptance furnish an insecure foundation for scientific classification, and that this usage is based on that profoundly mistaken notion of the nature of Gothic art that led the writers of the Italian Renaissance to call everything Gothic, i.e., barbaric, that did not conform to what they regarded as classic.

Professor Hamlin appears to me inconsistent. In an early part of his paper he accepts the principle that structural systems furnish the true basis for architectural discriminations, and he deplores "the habit of regarding architecture as a matter of details." "It was," he says, "upon these that chief attention was centered" by the older writers, so that "the nature of architecture itself was fundamentally misconceived." After referring to some of the later writers, he rightly speaks of Viollet-le-Duc as having "set forth in clear terms and with authority the structural basis of the entire development of the French Gothic styles," and adds: "It was not until 1889 that any writer in English undertook to embody in permanent form the results of this progress; and it was an American (referring to myself) who first performed this much needed task." He speaks of my writings (p. 124) as having "presented an admirable analysis of the structural elements of the French Gothic system." But after thus endorsing the principle that structural systems are fundamental, he goes on to speak, as I have said, of the term Gothic as connoting a movement covering all Western Europe. Very little scrutiny of the wide field of mediaeval architecture in Western Europe will show, however, that there was never any general movement governed by a common structural principle, and therefore it appears to me that no single term can be applied to any "vast body of mediaeval architecture" except on the principle of regarding architecture "as a matter of details."

The new spirit that was abroad in the eleventh and twelfth centuries found very various architectural expression in Western Europe, as was natural under the unsettled conditions and conflicting influences of ancient tradition, of short-sighted imitation, and of groping experiment. It was in the Ile-de-France alone, where exceptional circumstances, and unparalleled inventive genius, accompanied by the finest artistic aptitudes, such as have never prevailed over wide areas, gave the conditions required for the growth of a new art. Thus in this favored locality there arose, during the twelfth century, a style of architecture such as the world had not before seen. This architecture never became common to the rest of Eu-

rope, or even to the rest of what is now called France; though some of its details, variously modified and denaturalized, were superficially engrafted on many other forms of mediaeval building, which details were taken by the early writers to constitute the Gothic style.

To designate this noble art I have used the term Gothic in the restricted sense to which so much objection has been raised, for reasons that I have enough explained. I may again say, however, that it is not for the term that I particularly care. What I think important is that this unique architecture should have a name to itself for the sake of clearness; and the term Gothic seems to me natural and appropriate, since this style embodies, as no other style does, fundamentally new principles which may be reasonably attributed to the Gothic genius. In what I have called the unprogressive types of mediaeval building, survivals of ancient principles are variously marked in the fundamentals of design and construction; which means that what I consider the Gothic character is not developed in them. No amount of dressing out in Gothic details can give such buildings a Gothic character. To include them in the same category with the distinctive architecture of the Ile-de-France is to confuse things of essentially different natures.

The fact is, as I have lately had occasion to show,* that the mediaeval architecture of Western Europe has not yet been faithfully studied, and its manifold forms discriminated, with primary regard to fundamental characteristics of structure; and so long as this inattention prevails confusion of ideas will continue.

Professor Hamlin's choice of illustrations shows this confusion. He gives an outside view of Vézelay to illustrate what he calls "Romanesque forms of Gothic buttress and tower design." But there can be no such thing as a Romanesque form of Gothic buttress. A buttress with an arch over the aisle roof is a Gothic buttress. The flying buttresses of Vézelay are no part of the Romanesque structure. They were added long after the original construction, and were derived from the early Gothic of the Ile-de-France.

He then gives the interior of the nave of Le Mans as a building "transitional from Romanesque to Gothic." But Le Mans is not a transitional work in any proper sense. It is, as I have elsewhere said,* a pasticcio made up of parts belonging to several different epochs. The features that may, to an unpracticed eye, give it a superficial suggestion of nascent Gothic, date from the middle of the twelfth century, and are in shortsighted imitation of the then far advanced transitional Gothic of the Ile-de-France.† It is not transitional in the sense of showing structural evolution. The successive interpolations it has undergone do indeed transform it superficially, but this is not the way in which organic Romanesque changes into Gothic. The high vaulting here inserted, though contemporaneous with that of the choir of Noyon, has nothing of the conformation that concentrates thrusts, arising out of the stilting of the longitudinal ribs. And it will be seen that the pointed arches of the ground story arcade are also additions without structural significance, since they are built under the round archivolts of the older structure which overhang them. A true transitional Gothic building is not like this. The genuine transitional character will be found in the church of St. Germer-de-Fly, near Beauvais, which I have described in detail in the book, *Development and Character of Gothic Architecture*, to which Professor Hamlin refers. Nothing of the same kind will be found outside of the Ile-de-France, and its immediate neighborhood.

Professor Hamlin next gives a lengthwise view of the outside of the nave of Reims, as an "expression of structure in the French Gothic." It is so, indeed, but a view of the interior is needed to make the system wholly in-

*In "The Study of Mediaeval Architecture," published in "The Journal of the Royal Institute of British Architects," 3rd Series, Vol. XXIII, No. 3.

*"Mediaeval Church Architecture of England," p. 30.

†The nave of Le Mans has been many times remodeled since it was first built as the hall of the Roman Governor's palace. It was extensively reconstructed in the ninth century (circa 835), and again at the beginning of the twelfth century. It appears to have assumed its present form about the middle of the twelfth century. Cf. "Etude Historique et Archaeologique Sur La Nef de la Cathedrale du Mans. Par Eugene Lefevre—Poutalis, Mamers, 1889.

telligible.* The distinctive structural character of the French Gothic is perfectly embodied here, and I would ask the reader who would know this character to observe this system well. Let him notice how the clerestory and ground story are entirely open between the piers and buttresses, so that no walls occur, save for the low one on the ground for enclosure, and the insignificant arch spandrels. Thus we have the fullest development of that skeleton construction which differentiates (as to structure) the style of the Ile-de-France from all other styles. Look how the piers are fortified against the vault thrusts by the double flying buttresses—the topmost buttressing arch meeting the pier but a little way beneath the cornice, that is, very nearly at the level of the crown of the vault. I have just said that a view of the interior is necessary to make the outside intelligible. It is so because the outer system is a consequence of that of the inside. Inside we should see that the great piers are carried up continuously from the pavement, and that the vault thrusts are gathered on them by stilting the longitudinal ribs, so that the flying buttresses outside can meet the thrusts effectively. This gathering of the vault on the line of the pier by stilting, produces a winding conformation of the vault which is a distinctive feature of what I call true Gothic vaulting over naves.† Only the structurally necessary ribs occur, and each rib is provided with its own support in the compound pier. All supports are logically adjusted, and graduated in their magnitudes in conformity with the ribs. Thus is the principle of organic skeleton construction wholly worked out, while all elements foreign to such construction are eliminated.

Turning to Professor Hamlin's other illustrations of what he would include in the Gothic category, it will, I think, be seen on examination that they have a fundamentally different character. The nave of Exeter, which comes next, is essentially a survival, not a structural development, of Norman Romanesque of the least organic kind. The structurally meaningless multiplicity of ribs does not give the vault that conformation which so effectively concentrates thrusts in the vaulting of Reims. The attenuated shafts have no correspondence with the ribs, no connection with the ground story piers, and thus the system has nothing in common with that of Reims; while the ponderous arcade of the ground story, and the heavily walled clerestory, and its passageway, do not at all differ in structural principle from those of a plain Norman building. The pointed arches and ornamental details are all that distinguish it from such a building.

As for the vault over the western crossing of Lincoln, in which Professor Hamlin calls attention to its "multiple ribs consistently applying Gothic principles," I do not think, after what I have already said, that there is any need for comment.

Neither is any special remark needed on the interior of Salamanca, and the rest of these illustrations. There are no "elements, qualities, features and principles" that are common to them and to Reims, or to any other Gothic building of the Ile-de-France; and there is thus no ground for grouping the whole in one category, save on the principle of classification by details which, as we have seen, Professor Hamlin has himself repudiated.

Professor Hamlin says that in my "Definition of Gothic" I have failed to provide the definition, and that what I have offered as a definition "is intentionally descriptive of a developed French Gothic building." But since I have made it plain that the French art alone is what I mean by Gothic, I could hardly be expected to offer a definition that would include anything else; and surely a true description provides the best sort of a definition.

*While this magnificent monument, now, alas, virtually demolished by the Germans, is of entirely true Gothic character as to construction, it was not an expression of the French art in its strictest integrity. The upper parts have already a good deal of the florid character that marks the decline of Gothic. A better example of the developed Gothic style is the nave of Amiens as originally built. The interior of Amiens, save for the opening of chapels in the aisles, remains intact; but the outside has been largely overlaid with debased ornaments. Enough, however, remains of the original design to show completely what it was.

†Shortsighted writers have called this a defect of French vaulting, and declared it an awkwardness. It is, however, a capital merit, and in my opinion an element of beauty. Indeed whatever makes a thing function has a tendency to beautify, as the winding surface of a ploughshare, or the bow of a boat.

On p. 429 he remarks: "Professor Moore has an undoubted right to restrict his own use of the term Gothic. . . But he must not claim this restriction as other than personal; he has no right to impose it on others." But I have not sought to impose it on others. I have merely tried to explain the position to which my study of the monuments has brought me, and to put the reader in possession of the facts as I have observed them. If he does not find these facts, and my analyses and comparisons of them convincing, he is at liberty to reject my conclusions. My book furnishes no ground for Professor Hamlin's remark.

Apart from the mere use of the term Gothic, the difference between my critics and me narrows down, as I have elsewhere said, to the question whether the Gothic architecture of the Ile-de-France is, as I affirm, a fundamentally different architecture from any other. If I am mistaken, the only effective way to refute my thesis is to demonstrate its fallacy by rational argument. This no critic, so far as I know, has undertaken to do. What my critics have not found to their liking has been met by counter affirmations, not by fair discussion.

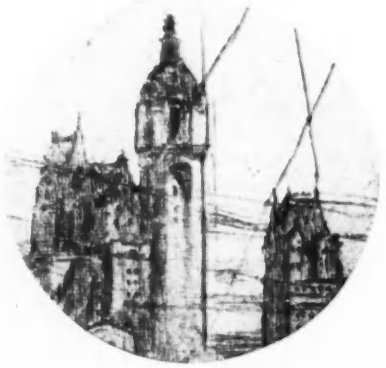
Professor Hamlin's remark (p. 432) that "to call other styles 'false,' bastard, non-Gothic, . . . is not legitimate criticism" would seem to imply that I have written offensively. I do not think I have used these terms, but if I have, it has not been in a cynical manner. I believe the candid reader will find that I have not written in a cynical spirit, and that my criticism is entirely legitimate. His further remark that my criticism "completely ignores the impressive fact of the great unities, the commanding resemblances of all the styles we commonly call Gothic," I believe I have already sufficiently answered, though some further remark may be given below.

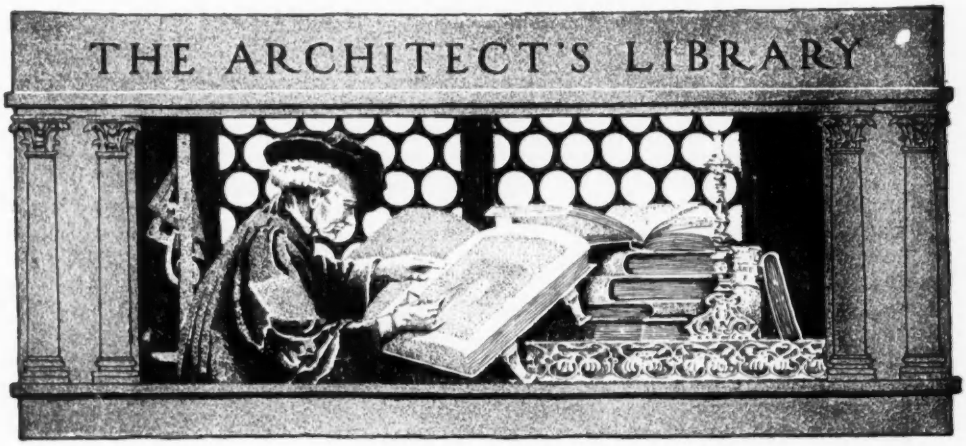
In a note at the end of his article Professor Hamlin refers to the lately published work on Gothic Architecture by Sir Thomas Jackson, and says of it: "There is no attempt at a succinct definition of the style, which 'cannot be defined by any of its features' but is regarded as an expression of the whole spirit of the Middle Ages, characterized by sound construction, economy (in its broadest sense) and aesthetic expression of construction." To this it may be said (1) that Sir Thomas Jackson *does* attempt a succinct definition, as we shall presently see. (2) A style *must* be defined by its features, for it is only by its features that it can be known. We can have no knowledge of a spirit except through its embodiment. And Professor Hamlin has complained (though incorrectly) that I have not looked for common "features" as a basis of classification. (3) The "whole spirit" of the Middle Ages was not Gothic. We are apt to forget that there was a vast survival of pseudo-classic spirit, together with a large proportion of Byzantine, and other Oriental spirit, that found expression in mediaeval architecture. Professor Hamlin fails to see that this architecture, taken as a whole, is as mixed as were the racial elements that produced it. (4) While some of it is characterized by sound construction, this construction is of several radically different kinds; as (a) Roman basilican—with timber roofs, continuous arcades, and unbuttressed walls; (b) Byzantine—with vaulting in the form of the dome on pendentives; (c) organic Romanesque—with groined vaulting on ribs and logical compound supports, including buttresses incorporated with heavy walls; and (d) what I call Gothic—with vaulting on ribs, and logical compound supports and buttresses, forming an organic skeleton, freed from all wall construction. And he takes no account of the fact that a vast amount of the architecture of the Middle Ages in Western Europe is not characterized by sound principles of construction, and the illogical building is of great variety, showing all manner of structural inconsistencies; (5) Aesthetic expression of structure can be predicated only of structurally consistent styles—as the pure basilican, the Byzantine, the organic Romanesque, and the Gothic.

I have not seen Sir Thomas Jackson's book, but if he is correctly quoted in a review by Mr. Francis Bond, published in the Journal of the Royal Institute of British Architects for February, 1916,

he does, as I have just said, attempt a succinct definition of Gothic architecture, as follows: "The constructional theory of a Gothic church in perfection is this. Support should be given at those points in the articulation of a building, on which the thrusts are concentrated, by large buttresses at right angles to the wall, either directly applied to it as in the Ste. Chapelle and King's College Chapel at Cambridge, or, when removed out beyond an aisle, bridging it by a flying arch. These buttress piers may be regarded as sections of the side wall, wheeled round at right angles to the axis of the building. The space vacated by them is filled by curtain walls, which receive no thrust, have only themselves to carry, and may therefore consist mainly of windows. At Amiens and Beauvais we see this theory of construction thoroughly worked out. The windows of the aisles . . . reach from pier to pier, . . . and the whole space above the triforium . . . is occupied by an immense window whose outer arch forms the wall-rib of the vault. The piers between the clerestory windows are only wide enough to receive the flying buttresses which sustain the nave vaults and descend on the massive pier beyond the aisle. . . . Every atom of material is economized, and the building consists of a series of parallel buttress-piers . . . between which is a curtain . . . chiefly of glass, to exclude the weather, which in theory might be taken away without disturbing the structure. . . . Advantage was taken of every experiment . . . to economize material and to suppress all that did not form part of the constructional skeleton."

Barring some inexact statements and important omissions, on which it is not worth while to dwell here, this definition has a strong resemblance to my own. And it should be noted that this "definite and concise account of the logic of Gothic construction" (to quote the words of Mr. Bond's review) is quite as exclusive as mine. Sir Thomas Jackson's characterization of Gothic construction applies to the developed Gothic of the Ile-de-France, and to nothing else.





BOOKS ON COLONIAL ARCHITECTURE

By RICHARD FRANZ BACH

Curator, School of Architecture, Columbia University

Part III.—Dwellings (Continued)

APART from the references to be found in the more general works noticed in the earlier papers in this series, such as collections of measured drawings and inclusive histories, it may be said that the district of the Middle States has not been granted its due meed of attention at the hands of students and writers. This statement is to be qualified, of course, by the fact that the Middle States in the old Colonial sense were not exactly co-extensive with those generally so denominated in the modern school atlas, and furthermore by the lack of fine definition of boundary for this district and for that usually called the Southern States. The two regions are quite distinct in the type of formative architecture produced only in so far as they are considered from the point of view of the type of their colonizers. These were of varied stock, as is well known, varying from the Dutchman of meagre means but of doughty spirit who carried his convictions to commercial success and agricultural fruition in the districts of northern Pennsylvania, New York and New Jersey, to the cavalier of the landed gentry traditions who received the southern lands by right of royal grant and lived on them as on a manor, or more properly, in the American sense, a plantation. While, however, the Southern States produced a category of buildings characteristic of and for all time identified with that region, the Middle States cannot offer such a uniform or harmonious development of representative architectural form. On the other hand, the showing in the Middle States is dependent upon a growth from a number of roots, English, Swedish, German, Welsh, as well as the predominant Dutch. In New England we found a rapid growth of cities, with secondary development in farmhouses; in the Southern States we shall later find a distinct contrast to this type of growth in the conception of the ennobled farmhouse or manor house; in the Middle States we find a much closer equalization in numbers of city and country houses. A very limited number of cities was bound to be founded, for it may be said that in modern civilization cities are an unconsciously developed feature, to a great extent, finding their existence without definite intention. But the few cities,—the chief

centers being, of course, New York and Philadelphia,—can hold our attention no longer than the broadcast activity of the builders of country and farm houses.

Pennsylvania was a polyglot colony, for with Pennsylvania must be considered Delaware, which formed part of it at the outset. We find in this Colony settlements of Dutch, Swedes, Germans and English, all adhering to traditions of speech and of national character, which remained well defined and produced well defined architectural forms. Although impelled to essay life in the new and alien conditions of the New World, these colonists were not by the same token impelled to make common cause in language, customs or art. Their artisan training retained its Old World savor in accordance with its origin in a particular part of that world and transferred that training to the new country and there worked it out in terms of different requirements and materials, each race individually and with no lack of clannish segregation. The strong later wave of colonization fathered to a great extent by Penn's Quakers, but seconded by other nationalities, served to absorb much of the earlier life, especially that of the Swedes, but not without leaving a strong impress upon art forms, names of settlers and in other ways. Race segregation was further aided by the actual conditions of settlement, which included in the case of the Welsh the right to govern themselves and to live in a tract of land of their own holding, conditions stipulated with William Penn, before the "holy experiment" took ship for free soil. A like isolation is noted in the case of German settlers, who from their original base at Germantown crept always farther due west into the untrammeled areas of northern Pennsylvania, operating mills and tilling the soil, speaking their own language, issuing their own books, as though Penn's Philadelphia were no nearer than London. The Germans, being more numerous than the Welsh, and originally adhering to varied creeds in the home land, practiced a similar differentiation in Pennsylvania, which carried still further the definition of distinct architectural types. In this manner, we note distinctions between the Suabian stock of the Moravians and others, from whom they hoped to differ as much as they did from the original church of Rome.

Such isolation is bound to breed a sort of antagonism, even though negative or indifferent, and this feeling is reflected in all types of expression, architecture included, to the extent that in all cases of well preserved buildings which have not felt the heavy hand of the well meaning but incompetent "restorer," it is yet possible to recognize the traits of their racial origins. In the cities we are not granted the same opportunity of study. The same spirit of commercial growth which prompted the erection of the earlier city mansions, whose splendor we well know from extant accounts in later years, also accounted for their destruction, because they occupied valuable land and community intelligence has not yet risen to the general level of appreciation which would prompt the preservation and restoration of such buildings. In rare instances city dwellers, patriotic societies or individuals have favored certain buildings, and these have been adequately provided for: we need only mention the Philipse Manor Hall in Yonkers, or the State House and adjoining buildings in Philadelphia, or the recently restored Dyckman House in New York. These are of sufficiently varied type, without citing additional examples, to indicate the wide differences that were readily to be found in the district of the Middle Colonies.

It will therefore be seen that a comprehensive study of the Colonial manifestations in this region will imply a detailed understanding of practically the whole Colonial development, regardless of geographic limitations so far as the type of architectural indications is concerned, for the Middle Colonies offer evidences of all forms found in other colonies. When the word Colonial is used in these articles, we mean—as we have taken occasion to state at various times before this—to include both the true Colonial and the subsequent and decidedly less faithful Georgian varieties.

Perhaps, because of the task involved and possibly because of the differentia-

tion in local sympathies which would destroy to a certain extent the essential harmony of such a study, no one has yet undertaken an inclusive work covering the whole Middle Colonies region. We can do no better than to refer to the general works, both historical and architectural purely. Among the former the best is assuredly that of Eberlein, entitled *The Architecture of Colonial America*, which has been reviewed in an earlier issue and repeatedly mentioned since. The latter class would include the broader collections of measured drawings which have been included herein from time to time, with specific mention of such restricted series of plates as *Old Philadelphia Colonial Details*, by Joseph Patterson Sims and Charles Willing (Folio. New York; The Architectural Book Publishing Company; 1915. $10), which has also been noticed previously. Note should be made also of Aymar Embury's *Dutch Colonial House*, which treats of the origin and design of this type of homestead, its old as well as its modern planning and construction (Large octavo; pp. iv+108, ill. New York; McBride, Nast & Co., 1913. $2), and of Henry H. Saylor's collection of papers by enthusiastic advocates of various styles for country houses, entitled *Architectural Styles for Country Houses*, which contains articles on the Dutch and other Colonial home types (Large octavo; pp. 124, ill. New York; McBride, Nast & Co., 1912. $2), both of which appear in a series with the half title Country House Library, a Series of Architectural Books for the Layman. A notable work in this connection is also that bearing the title *Colonial Architecture for Those About to Build*, which is in our opinion misnamed. It is an excellent work covering "the best examples, domestic, municipal and institutional in Pennsylvania, New Jersey and Delaware, with observations upon local building art of the eighteenth century" (Crown octavo; pp. xv+269, 207 ill. Philadelphia; The J. B. Lippincott Co.; 1913. $5).

The Colonial field in Delaware, consequently to a certain extent also of the original Pennsylvania district, together with that of the adjacent Colony of Maryland is considered in *Colonial Mansions of Maryland and Delaware*, by John Martin Hammond. (Octavo; pp. xiii+304, 65 ill. Philadelphia; The J. B. Lippincott Company; 1914. $5.) This is one of a series of volumes in the Colonial field, although not closely bound to maintain a given character as to manner of handling. The work is excellently published, is issued in a limited edition from type, the type having been distributed upon publication. The illustrations are clear, made from photographic originals, and in most cases with no little regard for pictorial effect. In general it may be said without hesitation that the volume will command interest in many directions. Unfortunately the manner of its preparation, which is, in other words, the author's purpose, is not distinctly or narrowly architectural, and therefore the volume cannot offer any deep interest for us in the present discussion. It is properly classed with a number of others previously listed, which concern themselves largely with local story, genealogy, the owners and occupants of houses and a brief non-technical description of the building. In such works there is rarely anything more in the way of illustrations than an exterior and possibly an occasional detail of a doorway or porch, for the parallel human interest. There is no reference to construction, to plan, except to mention the location of the drawing room and of the banquet room, both of which formed the background for many a feast and festivity, especially in the more southern buildings. The present volume considers thirty-seven mansions, offers in most cases a few words descriptive of the building, and then continues with the tale of the dwellers beneath its shelter. The volume has an excellent index and is handled throughout with a painstaking care and, no doubt, historical accuracy, and it is written, finally, in thoroughly readable style.

Of similar interest, but of more decided architectural value, is a work from the same press by Harold Donaldson Eberlein and Horace Mather Lippincott entitled *Colonial Homes of Philadelphia and Its Neighborhood*. (Octavo; pp. 365, 72 ill. Philadelphia; The J. B. Lippincott Company; 1912.

JACKSON'S "GOTHIC ARCHITECTURE"

By PETER B. WIGHT

ANY review of Sir Thomas G. Jackson's book* would fail in a useful purpose if it did not demonstrate the value of this great work to English-speaking architects of the present day or point out its importance to the cause of architectural education at a time when architecture appears to be again in a formative condition. This is demonstrated in nearly every page. It is the latest of a series of works by different authors that have appeared since the early part of the nineteenth century, being the most recent investigation of the origin and development of Gothic architecture from the twelfth to the fifteenth centuries, inclusive. The literature of this subject has been, for three-quarters of a century, so extensive and elaborate, and has been so lavishly illustrated, that the mere mention of a series of such books in detail would fill a large catalogue; and it behooves the student of today to be careful in selection, and to seek expert guidance in undertaking a course of reading. This is especially so as travel for proper consecutive study on the spot is now almost impossible. Many of the books heretofore considered as standard are now misleading and useless, being expositions of theories which are without foundation on facts, and covering matters of detail which have little or no important relation to what was a great civilizing movement throughout all of Europe during the time covered by this treatise. Mr. Jackson's book therefore is now more than ever useful in taking the place of many that have preceded it, enabling the student to save much time that might be wasted, especially in studying such works as appeared, say, before the time when Viollet-le-Duc issued his great *Dictionnaire*. This is not to say that several of the works issued between that time and the present are not highly instructive and necessary to the student.

In an admirable article by Prof. A. D. F. Hamlin in the pages of this journal for May is given a list of the most important works on Gothic architecture that have appeared during this period which are of philosophic value as well as descriptive, and written with a purpose. The subject of the present book, which was issued after his article was in print, is only mentioned in a footnote. The reader's attention should be recalled to that article in connection with this brief review. The list comprises a few that are of greatest educational value to the student of architecture of the present day. And let me say that I use the words "student of architecture" advisedly; for to have said the "student of *Gothic* architecture" would imply that these books are only valuable to those who desire to practice the art so-called. Mr. Jackson and his predecessors have made it clear that the development of Gothic art in the Middle Ages, properly analyzed, explained and demonstrated from the facts of its history—which have been accessible in its monuments for five centuries—has involved principles of construction and design applicable to any architecture that has existed or may be developed in the future. When recognized and accepted, they may readily be our guide in the study of any previously existing or subsequent prevailing style of architecture. The lesson to be conveyed is that the recognition and understanding of these principles and their expression in practice are essential to all progress both now and hereafter. They are necessary to enable us to understand the nature of evolution, which is continuous among all intelligent people, and that no construction is true to the laws of nature that is not rational and logical; while good construction and the economic use of materials available is essential to all architectural progress and the development of an archi-

*GOTHIC ARCHITECTURE IN FRANCE, ENGLAND AND ITALY, 2 vols., large octavo, Ills. By Sir Thomas Graham Jackson, Bar't, R. A., F. S. A., Hon. D. C. L., Oxford. Hon. LL. D., Cambridge. Hon. Fellow of Wadham College, Oxford, Associé de l'Académie Royale de Belgique. Cambridge, at the University Press; University of Chicago Press, $14.50.

tectural art that illustrates the advance of civilization. The author tells us why this is so. He also points out that the variation in medieval styles contemporaneously in the various countries in which they were practiced was due to the facilities they had for quarrying, transporting and working the different materials accessible to each, especially the stones and marbles as well as bricks and terra-cotta; whether the stones were quarried in large or small pieces and hard or soft, or what facilities they had for putting them in place. The same conditions prevail now, but only to a limited extent on account of our scientific knowledge and facilities for transportation. In this connection, though it is a little out of place, I may as well quote the very last paragraph in the work so that the reader may understand his point of view as to what the influence of the study of Gothic architecture may be upon the present and future practice of the art, and the lesson it conveys.

"Let our architects, fully stored with knowledge of the past, but regarding the bygone art as their tutor rather than their model, bend themselves resolutely to the problems of the day, to novel modes of construction, to the use of novel materials, to new habits of life and new social needs, and let them satisfy these demands in the most direct and common-sense way regardless of precedent or authority, and they will be working in the true Gothic spirit. If a man has the divine fire of art within him and works on these principles, the details will come of themselves, and it cannot be but that what he does will have all the qualities of good and true art."

In the first volume we find a very complete account of the history and development of Gothic architecture from the Romanesque and Norman of France at the period where ended the author's previous work on Byzantine and Romanesque Architecture published two years ago, summarizing much that had been previously said by Viollet-le-Duc, Professor Charles H. Moore, and others; while he does not hesitate to discuss many of the opinions and deductions expressed by them, though in a kindly spirit. He covers all the countries in which Gothic, or vaulted and pointed architecture was developed and practiced except Germany, which, for evident reasons, he has not been able to investigate during the last two years. But he says that all German Gothic was derived from France, just as much Italian Gothic was derived from Germany. The Germans merely followed French developments. Being an Englishman, he does not fail to pay his compliments to the Germans for their skill in devastating within the last two years one of the most important fields of French and Belgian Gothic in the quickest possible way.

After referring to the definitions of Gothic architecture by previous authors he says: "To arrive at anything like an exact definition of Gothic architecture we must look deeper than the mere outward phenomena by which we are accustomed to recognize it. To judge from them alone, no words could be framed to describe in common terms buildings so diverse as King's College Chapel (Cambridge) and Salisbury Cathedral. Yet different as they are from one another they both result regularly and naturally from the application of the same principles under somewhat different circumstances. These principles were already at work in the Romanesque buildings of the preceding centuries, and it is to their constant application that the development of the new styles are due. The same principles which brought Romanesque architecture to birth out of the style of ancient Rome, when carried further and pushed to their logical consequences, produced the arts of the Middle Ages which we call 'Gothic.'"

The above is only one of the preliminaries to the first chapter of the first volume, which is devoted to its farther elucidation. Continuing in the same vein he says: "There was no interruption, no break of continuity in development; the earlier style melted gradually, almost imperceptibly into the other; and afterwards one phase of Gothic passed gradually and imperceptibly into the next."

"Three grand principles have governed the development of Gothic architecture, as indeed they have that of every good style that the world has ever seen.

"The first is that the construction must be sound and good. Good building is the foundation of good architecture; no amount of design can make up for a defect in this respect. This however does not take one beyond mere utility, and engineering, and does not touch the bounds of art.

"The second great principle is that of economy; by which I mean not only thrift, though that comes in too, and the Gothic builders might have said with Pericles

φιλοκαλοῦμεν μετ' εὐτελείας,

but economy in the original sense of the word, that is to say a nice regard for arrangement and proportion, the due observance of circumstance of time and place, of the means available, of the materials at your disposal, and of the mode of using them to the best advantage. This takes us a step farther. The suitable treatment of material so as to make the best of its natural qualities without waste or misapplication carries us a long way to our third great principle.

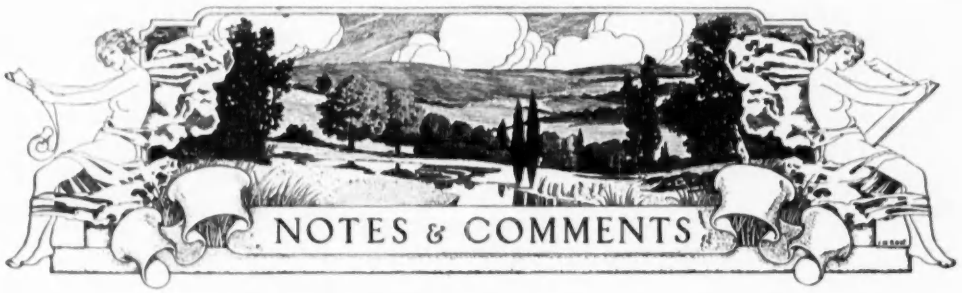
"The third principle is that the design should be the aesthetic expression of the construction. For architecture differs from mere building simply in this, that it is the art of building "expressively and beautifully." * * * "In either case the artistic faculty is a gift of nature which may be cultivated but cannot be implanted when it is absent."

These quotations are from the first chapter on "Definition of Gothic." It differs very little from that given by Prof. Moore in his book on the "Development and Character of Gothic Architecture" (MacMillan, 1899). Continuing, he falls in the wake of Viollet-le-Duc, but gives him little credit for it except in the illustrations used. Chapters 2 and 3 are devoted to an illustration of the Gothic vault, which he discusses with Viollet-le-Duc and Moore. The former thought the first development of the Gothic vault was found in the church at Vezelay, but Jackson agrees with Moore that it is found first in St. Ambrosio at Milan. The author also agrees with Moore that the first stepping stone to cross vaulting is found in the Basilica of Maxentius at Rome, but that the vaulting of St. Ambrosio anticipates the whole system of the Middle Ages, while Moore finds the first advance in northern France, after St. Ambrosio, in the monastic church at Vezelay, just as Viollet-le-Duc does.

The author starts a very interesting discussion with Prof. Moore on the origin of stilting the wall arches in vaults, because Moore quoted from Sir George Gilbert Scott's lecture on the "Rise and Development of Medieval Architecture," in which he said that "the side arches were sometimes stilted, not from any necessity, but merely to afford greater space for the clerestory windows." Prof. Moore claimed that this was done to concentrate the thrust of all the vault ribs more nearly on the buttresses. But Jackson rejoins on page 39 of the first volume that Moore was wrong in criticising Scott. This was natural, for it happens that years ago Jackson was an assistant to Scott in most of the restorations that he carried out in English cathedrals. This experience has evidently been of great value to him in elucidating the principles of Gothic construction. It is curious that Viollet-le-Duc has not treated on this detail, that is, so far as I know.

The first fifty pages of Vol. I are devoted entirely to the discussion of the development of vault and buttress construction and are well worthy of study, considering the great experience of the author as a restorer.

The whole book is a sumptuous work from every point of view, perfectly printed, with marginal notes on every page, and illustrated throughout, mostly with half tones from the author's original drawings, which are exquisitely rendered, being the work of a lifetime, as their dates show, and with but few illustrations taken from other books, for all of which due credit is given. The whole work is practically a supplement and continuation to the same author's "Byzantine and Romanesque Architecture," printed and bound uniformly with it.



Philadelphia Adopts One-Story School Building Policy.

The growing popularity of the one-story type of school building which has proved such a success on the Pacific Coast has again been evidenced in the recent action of the Philadelphia Board of Public Education in directing its superintendent of buildings, J. Horace Cook, to draft plans for a one-story school building, to be located at Ann and Tulip Streets. This new school, it is announced, will contain thirty-two divisions. There will be only a small basement in one corner, where the heating plant will be located. The light and ventilation problems will be met, in large measure, by a roof of skylights.

The new departure was made at the suggestion of Edwin Wolf, chairman of the finance committee of the board. In discussing the one-story school building for big cities, Mr. Wolf said:

"I know that some persons, as soon as they learn what we intend to do, will offer objections. They will say that we have no sense for the beauty of construction and that we owe it to the school system to erect buildings that will please the eye. This is because these people are used to seeing school buildings of several stories.

"I do know, however, that the one-story buildings will contain equipment and space for all the things that are now done in other buildings of the two and three-story type. I also know that where we are now paying $250,000 for an elementary school building of two or three stories, the cost of a one-story building will not be much over $125,000. There may be some sections of the city where, through congestion in property, it will not be possible for us to erect one-story buildings. But in all neighborhoods where it is possible for us to acquire land enough for the purpose I shall urge the construction of the one-story school."

CHAS. R. ROSENBERG, JR.

The Architecture of Mediaeval Chester.

Chester stands foremost among all of the cities of England in the richness of its mediaeval architecture and possesses at the present time more examples of this architecture of the sixteenth and seventeenth centuries than any other city of England.

The mediaeval portion of this city is surrounded by walls ten or twelve feet in thickness, which are still at the present time in a very fair state of preservation, and inside these walls stand the ancient buildings of Chester on streets which remain today the principal streets of the modern city. They are set at all angles both in front of and behind the street line, if such a line can be said to exist in streets which are narrow here, wide there, now turn off at one angle, now at another.

It is as though the buildings have been placed according to the individual desires of the owners and later a street run between them. Where the street is broad the sidewalk runs in front of the buildings, but where it narrows the first story of the buildings is replaced by an arcade, called a "row," which shelters the walk. The second story is carried on quaintly carved wooden columns, the third and fourth stories, which as a rule each overhang the one below, being supported on brackets, which are also carved, often in the likeness of a human or grotesque figure.

These buildings, for which Chester is justly famous, are all in what is called the Elizabethan or half-timbered style of architecture. They are sometimes of three, usually of four, stories, with gable roofs above which rise high chimneys, capped with chimney pots of all varieties of odd designs.

The front of the upper stories and the gable are decorated with all manner of geometrical designs in timbering filled in between with brick, which are in turn cov-

AN OLD COURTYARD.

TYPICAL OVERHANG AND CARVING.

ered with white plaster. This timbering is all a structural part of the frames of the buildings.

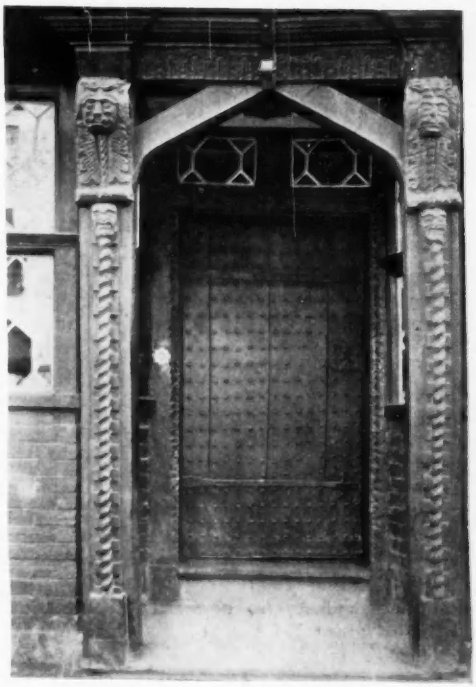
The ground stories are used as of old for stores, but on account of the inroad of modern business the old store fronts have been mostly done away with, being replaced by more or less modern show windows, but above, on the contrary, the second and third stories remain practically as they were built about three centuries ago and are used in a great many cases for the same purpose as in former times; that is, for living apartments of the storekeeper and his family.

The builder and owner of this period were to all intents and purposes one and the same person, and he put into his building a great amount of his own personality (which is a point which it would be greatly

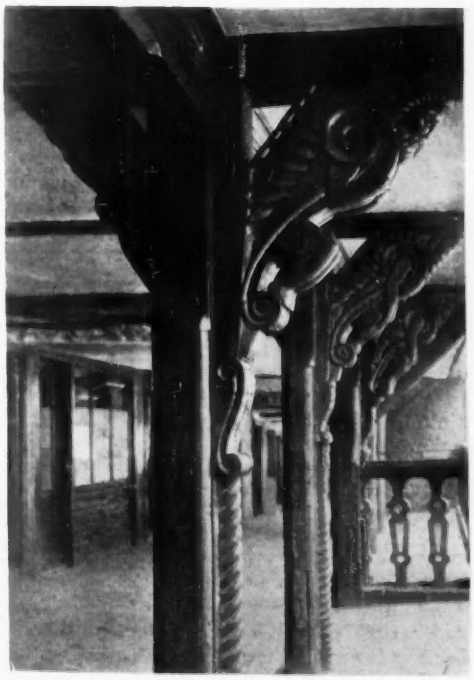
STREET FRONTS OF TWO BUILDINGS, CHESTER, ENGLAND.

to the advantage of modern builders to remember). The part of his house he used for business he made plain and simple, caring nothing for useless ornament where no one would have the time or inclination to notice it, but on the two upper stories of his house, that is, on his home, he lavished all of the ornamentation which he could afford. Carving was his delight, and he used it everywhere, on all of the structural members, on brackets, corner-posts, window-heads and barge board, everywhere, in fact, where there was the slightest opportunity for beautifying and enriching his home.

The windows of the upper stories are casement in groups, decreasing in numbers toward the top. That is, if the second story contains five in a group, there will be, as a rule, three in the third and one in the fourth, the number depending, of course, upon the width of the building. The columns and beams which support the overhang of the second story, and the brackets carrying the third and fourth stories, are carved very richly in different grotesque forms. The entrances, where the first story does not happen to be used as a store, are ornamented with carving, and the doors are of very heavy oak, studded with nails and with huge wrought iron hinges.



CARVED ENTRANCE AND ORNAMENTAL DOOR.



AN ARCADE OR ROW WITH CARVED BRACKETS.

The interiors of the old buildings were very plain on the first story, but above, in the living apartments of the owner, no expense was spared. The living rooms, as a rule, were well lighted by the casement windows, which were divided into square lights.

The plastered ceilings were sometimes ornamented by a plaster coat of arms, in the center, and which was painted in colors, or by an ornamental frieze of flowing design. Where beams occurred they were often plastered over and ornamented with a like design. The mantelpiece of oak was always the most important feature of the rooms, and on it was lavished the most wonderful carving of this period. The principal ornamentation was confined to the overmantel, although in some cases the stone facing was also carved.

It is not difficult to see from an examination of the work of this period that it was done, as a rule, by men who loved their trade, put their heart into their work, and who took that pride in it, which is an item absolutely necessary to the accomplishment of beautiful and lasting buildings.

DUANE LYMAN.

The Mystery of the Ionic Volute.

Of all the architectural forms that have come down through the ages of building, perhaps none is of older lineage or of greater popularity than the Ionic volute. This decorative spiral with its graceful curve and enticing form, seems to possess an alluring power—a mystery and charm which have made it a popular motive from the time of the builders of the pre-historic lands of the Far East, down to the modern era of American building.

Most architectural forms used in a purely decorative sense can be readily traced to some rather certain and definite origin. They are usually the fruits of some historical suggestion or the result of the material at the builder's command. Plant life and animal forms have suggested decorative features, and even in a purely developing art have the forms been imitated in a material suited to their portrayal. With the Ionic volute, no one agent, either of plant or animal form, of material or of structure, seems to point directly to the use of this feature as a transition between a vertical post or column and the horizontal beam or lintel. Many theories have been advanced as to the derivation of the volute, but so many and so diverse are they that they only serve to increase the mystery.

The earliest form of the scroll or volute known to archeologists was found among the very ancient remains of Assyrian and Persian building, the Assyrian being the earlier of the two, while the more complex scrolls are found in the Persian. These earlier volutes are sometimes thought to have been imitations of some plant form, possibly the tendrils or foliage of the reed or tree trunk of which the first supporting members must have consisted. These material forms may have later been imitated in the more substantial stone.

Other archeologists claim that the scroll was derived from the art of early metal workers, forming the conclusion from the natural spiral formed by the coil of thin metal strips.

Still another theory is founded on wood construction, the belief being that the volutes were formed by the ends of wooden posts frayed out and curling up as they were driven down into the ground, or subjected to a heavy load laid across their unprotected ends.

Although the scroll and volute form seems to have been in common use many centuries before the classic period, it remained for the Greeks to bring it into a high state of artistic development with the rare touch of the Greek sculpture. Here, too, did it become designated as the Ionic, from its adoption and perfection by the Ionians. This race was clearly of Asiatic origin, having crossed the inland sea and settled on that portion of the Grecian peninsula known as Attica at a very early date of pre-historic Grecian civilization.

The Ionians were distinctly differentiated from their co-inhabitants of the Grecian peninsula, the Dorians. This is apparent in their architecture, the Ionians displaying a feminine grace as compared with the more masculine vigor of the Doric buildings. This characteristic, coupled with the fact that the Ionic order was most frequently used by the Greeks in their temples to the commemoration of female deities, has led some authors to the belief that the Ionic volute was in some way symbolic of womanhood.

Vitruvius, in his treatise on architecture, even goes so far as to state that the Ionic volute was derived from a form of hair-dressing in vogue among the Greek maidens, while the fluting in the shaft below was suggested by the folds of drapery—ideas more fanciful than logical it would seem.

One Greek archeologist has advanced the suggestion that the volute was inspired and traced from the curves of the snail's shell; another that it was formed by the delineations resulting from a cord being wound around a stick placed in the eye of the volute. Still another argues that the spirals were inspired by the curving edges of a parchment containing the records of the building, which was placed between the post and the lintel with a ceremony precedenting the modern laying of a cornerstone.

One with a tendency to trace all decoration to construction suggests that the circular volute may well have resulted from wooden rollers placed over the columns to take care of any expansion and contraction of the horizontal member resting upon it.

While it is difficult to base one's belief of the origin upon any one of these theories they all add interest to this popular form, a form which will continue to be used as long as it serves the purpose of meeting the artist's demand for beauty.

R. S. Fanning.